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WALTER A. JILLSON. M.D.

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A TEXT-BOOK
OF
CLINICAL MEDICINE.

TREATMENT.

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PROFESSOR OF MEDICAL DIAGNOSIS AND CLINICAL MEDICINE IN THE HAHNEMANN MEDICAL
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VOLUME II.

DISEASES OF THE CIRCULATORY AND GENITO-URINARY SYSTEMS,
BLOOD AND DUCTLESS GLANDS, NERVOUS SYSTEM, SKIN, EYE,
AND EAR, HYDROTHERAPY, X-RAY THERAPY, DISINFECTION, AND
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CONTENTS OF VOLUME II.

CHAPTER XVI.	
DISEASES OF THE CIRCULATORY SYSTEM,	PAGE 609
CHAPTER XVII.	
DISEASES OF THE KIDNEYS,	682
CHAPTER XVIII.	
DISEASES OF THE GENITO-URINARY ORGANS,	723
CHAPTER XIX.	
DISEASES OF THE BLOOD AND DUCTLESS GLANDS,	780
CHAPTER XX.	
GENERAL REMARKS ON THE TREATMENT OF DISEASES OF THE NERVOUS SYSTEM,	800
CHAPTER XXI.	
DISEASES OF THE BRAIN,	834
CHAPTER XXII.	
DISEASES OF THE SPINAL CORD,	860
CHAPTER XXIII.	
DISEASES OF THE PERIPHERAL NERVES,	883
CHAPTER XXIV.	
SO-CALLED FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM,	912
CHAPTER XXV.	
DISEASES OF THE MIND,	985
CHAPTER XXVI.	
DISEASES OF THE SKIN,	1011
CHAPTER XXVII.	
DISEASES OF THE EYE,	1118

CHAPTER XXVIII.

	PAGE
DISEASES OF THE EAR,	1143

CHAPTER XXIX.

X-RAY THERAPY,	1155
--------------------------	------

CHAPTER XXX.

HYDROTHERAPY,	1163
-------------------------	------

CHAPTER XXXI.

DISINFECTION,	1175
-------------------------	------

CHAPTER XXXII.

THE OPSONIC METHOD OF TREATMENT,	1180
INDEX,	1187

CHAPTER XVI.

DISEASES OF THE CIRCULATORY SYSTEM.

Pericarditis.

THE prophylactic treatment of pericarditis must be of indirect character. We can never know *a priori* which of our patients will be stricken with it. We do know that certain diseases, as rheumatic fever, scarlet fever, and the acute infectious diseases generally, tuberculosis, and acute nephritis, are most infrequently its cause or forerunners. All measures looking to the intelligent management of the patient's suffering from the above-named affections, must lessen the liability not to pericarditis alone, but to all of their sequelæ and complications. Being acquainted with the danger of complications and sequelæ, we quite naturally are more energetic in our therapeutic measures. In the case of acute nephritis it should be remembered that pericarditis may constitute the first manifestation of the disease.

In the active treatment of pericarditis, the most important agent is absolute rest in bed. It is essential that the patient be kept as quiet as possible, and free from all aimless and unnecessary tossing about. The wisdom of firmness in enforcing this direction is made evident when we bear in mind the anatomical and pathological questions involved in pericarditis. The heart is an actively mobile organ with an inflamed serous sac, the opposing surfaces of which are constantly rubbing against each other. The more active the cardiac movements, the greater the resulting friction. Thus it is that we have an ever-acting cause to maintain local irritation. This, of course, cannot be stopped, but we can by keeping the heart as quiet as possible lessen the injurious influence of such activity. Not only is it important that we keep the patient physically quiet, but we must also keep him away from all excitement, such as comes from company and psychical influences of all kinds. When effusion takes place, and there is clinical evidence of cardiac embarrassment, the enforcement of rest is more imperative than ever. The patient should not be permitted to take such ordinary exertion as feeding himself, and the use of the bed-pan must be insisted upon. In other words, the case must be treated with the stringent regulations demanded in cases of myocardial failure.

Pain is oftentimes a symptom to which we must direct our attention. In the majority of cases, it is efficiently relieved by simple applications and the curative remedy. Fortunately, the applications are those which to a

certain extent relieve the inflammation, *i.e.*, heat and cold. One can never tell in advance which of these agents is the better in the individual case. As a rule, heat in the form of poultices is preferable. To secure the best results, the poultices must be changed as soon as they have cooled; otherwise, we have a soggy mass on the præcordium keeping the bed-clothing wet, doing no possible good, and making the patient decidedly uncomfortable.

Cold applications should be employed when heat fails. For this purpose, ice-bags or Leiter's coil, preferably the latter, should be used. To avoid any discomfort from the low temperature, a piece of fabric of some kind should always be placed between the skin and the cold-producing apparatus.

If pain continues despite the above measures, we must have recourse to Morphia, *but only if the exigencies of the case demand it*. To prevent any embarrassment of respiration, it should always be given in combination with Atropia. In children, it is advisable to administer Codeia as the analgesic.

The general trend of medical opinion is opposed to the use of counter-irritation. There seems to be no evidence to prove that small blisters, the Pacquelin cautery, or the mustard-plaster, are of any avail in limiting the severity of the underlying inflammation.

If insomnia or restlessness persists despite the general and medical treatment, I must confess a preference for Morphia as the least objectionable palliative. It certainly does not have the depressive effects observed from Sulphonal, Trional, Chloralamid, Chloral hydrate, etc., and is decidedly more certain in its action.

The diet of the patient should be regulated according to the nature of the primary disease, and the patient's general condition. There is nothing in pericarditis itself to demand dietetic restrictions. The danger of the disease lies in an associated degeneration of the myocardium; hence, the dietetic indication is for food as nourishing as existing conditions will permit. Care must be exercised that the patient is not permitted to overload the stomach, for much harm may be done thereby. Milk, eggs, soup, and broths should constitute the main diet when the associated constitutional symptoms are well defined. The nutritious qualities of the broth may be increased by the addition of one or two raw eggs. When fever is slight or absent, the patient may be indulged in some of the lighter solid foods, as raw oysters, chicken, toast, bread and butter. If the indications for good nourishment are strong, the patient should be fed at short intervals rather than full quantities at regular meal-times.

When, as sometimes happens, nausea and vomiting, which resist all medicinal and dietetic treatment, appear, we have no recourse but rectal alimentation.

Palliation of an obstinate dry cough is best accomplished by the administration of Heroin in doses of one-twentieth of a grain every four hours. Very frequently, the single dose brings relief sufficient to continue for the twenty-four hours.

When palpitation of the heart is sufficiently annoying to be a source of suffering, the best treatment, aside from remedies, is the application of the ice-bag or the cold Leiter coil.

The practice of administering Digitalis in physiological doses as a remedy in pericarditis is in the highest degree irrational. Pericarditis is an inflammation of a serous membrane, a condition over which Digitalis as a physiological remedy has no control whatever. When the pericarditis is associated with impaired function of the myocardium, as shown by the weakness of the pulse and heart sounds, Digitalis is indicated, but because of existing conditions, and not for the pericarditis. Even rapidity of the pulse is not an indication for the drug, unless it is associated with weakness. Babcock * very properly suggests its administration also in cases presenting scantiness of the urine and other evidences of visceral congestion. Briefly then, Digitalis is indicated in pericarditis just as it is in other heart diseases—*i. e.*, when there is myocardial incompetency. The advice given by Forchheimer that it be administered early in anæmic patients and in subjects of scurvy, is a matter for individual opinion, but is probably unwise.

Pericarditis being in the majority of cases a complication of rheumatic fever or a disease of rheumatic patients, the curative remedies are those which are generally found indicated in the primary condition. In the article on the treatment of arthritic fever I have spoken of the medicines, and have laid special stress on the value of the salicylic acid preparations. Goodno is enthusiastic over Colchicine, going so far as to say that "not one case of pericarditis having occurred in over one hundred and fifty cases of rheumatic fever treated with this remedy by the writer and several friends. This is much superior to the best reported results from the use of salicylates."

Of other remedies indicated in pericarditis, those most deserving of mention because the most frequently indicated are *Cantharis*, *Bryonia*, *Spigelia*, *Cannabis*, *Aconite*, *Kali carbonicum*, *Asclepias tuberosa*, *Kali hydriodicum*, *Apis mellifica*, *Anacardium*, and *Arsenicum album*.

Aconite is indicated early in the case with fever, anxiety, and palpitation as prominent symptoms. Præcordial pain is present, and the pulse which is first full and accelerated becomes weak and irregular. A sense of constriction about the heart is regarded by some as a valuable indication for this remedy.

* *Diseases of the Heart and Arterial System*, p. 89.

Spigelia is prescribed by many physicians as a routine remedy in pericarditis. It owes its reputation very largely to Fleishman, who prescribed no other remedy in this disease. Pain and disturbance of cardiac function are prominent. The patient complains of anginal pains, which extend over the chest and down the left arm. The pulse is irregular and small, and there may be attacks of syncope. It is generally admitted that it is no longer the remedy when pericardial effusion has taken place.

Arsenicum is indicated with the onset of effusion. Usually, the anxiety and oppression which mark the beginning of this stage indicate Arsenic before the physical signs are sufficiently strong to show the pathological condition within. Special indicating symptoms as formulated by Jousset include "constrictive pain at the upper portion of the sternum, violent and irregular palpitations, nocturnal anxiety, and especially tendency to lypothymia."

Cantharis, *Apis mellifica* and *Bryonia*, are all of possible use in pericarditis, because of their value in serous membrane inflammations. *Cantharis* owes its use entirely to its efficiency in cases of pleurisy, and is used almost entirely in uncomplicated cases of pericarditis. It is often alternated with Aconite, *Bryonia*, and other remedies. *Apis mellifica* is indicated in cases running a chronic course, in which there is effusion and œdema of different portions of the body. *Bryonia* is unquestionably the one member of this trio with symptomatic and pathological indications calling for its use in all stages of the disease. It is a great anti-rheumatic remedy; it has a widespread efficiency in diseases of serous membranes with or without effusion. It is indicated by stitching pains in the cardiac region, aggravated by even the slightest motion, gastro-intestinal symptoms, dryness of mouth, and constipation. It is not to be regarded as of any utility in cases showing disturbance of cardiac function. Hughes speaks of *Bryonia* as not to be trusted alone, but always in alternation with Aconite or *Spigelia*.

Colchicum as a remedy directed to the pericarditis *per se*, owes its reputation to the remarkable results observed in the cases reported by Kidd and Laurie. Special symptoms include violent palpitations with anxiety, palpitations and stitches about the heart, pericardial effusion, weakness of the pulse, gouty or rheumatic subjects, and distressing restlessness and insomnia.

Cannabis was recommended by Hartmann and Jousset, the symptom being anxiety, palpitation of the heart, and shooting or lancinating symptoms in the region of the præcordia.

Kali carb. is indicated especially by sticking pains in the region of the heart, but in the later stages of the disease.

Kali hydriodicum is one of the important remedies for the stage of effusion. The patient complains of great dyspnœa, smothering feeling about the heart, which awakens him from sleep, and weakness of the pulse.

It may be given in the low attenuations or in small doses of the crude drug.

In cases in which the sense of weight and oppression are not dependent upon effusion, Thomas* recommends *Lobelia*, dissolving half a drachm of the tincture in four ounces of water, and administering one teaspoonful of the solution every hour.

Thomas also speaks favorably of the action of *Macrotys* (*Actea racemosa*), when there is muscular soreness; "a drachm to a half glass of water will give better results than the small dose. The early eclectics accomplished better results from a decoction of the fresh root, but this is not readily obtained by the majority of physicians, and we will have to depend upon the less efficient tincture."

Asclepias tuberosa is a remedy introduced by the eclectics and used by them under much the same indications as we prescribe *Bryonia*. It was highly esteemed by Hale† in sub-acute pericarditis when there was "pinching pain in the region of the heart extending to the left shoulder; palpitation; feeling of contraction in the cardiac region; tenderness over that region; fever with hot moist skin."

Anacardium was recommended in rheumatic pericarditis by Farrington,‡ when there were sharp stitches through the cardiac region, these stitches being double, that is to say, first one stitch comes and is quickly followed by another, and then there is a long interval."

Cactus grandiflorus is indicated when pericardial inflammation has extended to the heart muscle. The case is usually of rheumatic origin. The subjective sensations about the heart are quite numerous, but those most prominent under this remedy include the sensation as if the heart was grasped in a vise, and acute and stitching pains. The patient experiences dyspnoea, with fainting; palpitation from slightest exertion and at night when lying on the left side. The pulse is weak.

Veratrum viride, like *Aconite*, is indicated in the early or febrile stage, especially in rheumatic cases; but it lacks the anxiety and restlessness of that remedy. Owing to its depressing influence on the heart, it should never be given excepting in the attenuations.

Paracentesis of the Pericardium—Indications.—Early in the course of pericarditis, there is no indication for paracentesis of the pericardium unless the functions of the heart are seriously embarrassed by the rapidity of the accumulation of fluid. Later, it is still wise to defer operation as long as the heart is acting well, and the effusion does not increase. If, on the other hand, the effusion shows no disposition to recede, the patient is dyspnoic, and the cardiac action irregular, we have strong indications for surgical interference.

* *Practice of Medicine*, p. 377.

† *Therapeutics of the New Remedies*, p. 52.

‡ *Clinical Materia Medica*, 2nd edition, p. 206.

If it should be decided to defer for a time, the dangerous condition of the patient must be entertained, and a strict rest enforced, lest sudden and fatal syncope ensue.

Results of Operation.—The statistics showing the results of puncture of the pericardium for effusion do not give a high percentage of recoveries. This cannot be laid to the dangerous character of the operation, but rather to the serious pathological condition it is intended to relieve. A careful analysis of recorded cases and the experience of many clinicians demonstrate that even where life is not saved, the patient obtains such great relief as to make the procedure a veritable Godsend. The proportion of patients saved, when the serious condition is borne in mind, is in reality large. In the rheumatic cases, the mortality is especially low. In tubercular, pneumonic, and purulent cases, the results have been bad, though some recoveries and much relief have followed.

The Operation.—Authorities have discussed the proper site for making the puncture, and no less than five different points have been advocated. A study of these would seem to indicate that in this, as in many other matters in medicine and surgery, one should be guided by the indications afforded by his case, rather than by any set rules. Paget,* while recognizing this general principle, says that “unless there be some special reason for going elsewhere, the best point is the fifth left interspace, one inch from the sternum.” This is in accordance with the general advice given that the puncture be made sufficiently to the left of the sternum to avoid injuring the internal mammary artery. This artery passes downward from one-fourth to one-half inch from the edge of the sternum. Rotch proposes that the puncture be made in the fifth right interspace close to the sternum, basing his preference for this point on the certainty of finding distention of the pericardium, even though the effusion be relatively small. Shattuck, Romberg, Curschmann, and Forchheimer advocate operating at a point to the left of the nipple based upon the percussion outlines. This latter plan has the undoubted advantage of reducing the danger of wounding the heart to a minimum. Forchheimer considers that the point advised by Paget is objectionable because of the danger of wounding the right ventricle. Sibson† recommended that the trochar “should be inserted into the distended pericardium at a point just above the upper edge of the sixth cartilage at the lowest part of its curve, more than an inch within the mammary line; and that the instrument should penetrate gently inwards with a direction slightly downwards, so that it may advance into the collection of fluid below the level of the heart.” The safety of these directions naturally depends upon the size of the heart, as Steel truly remarks. “When the heart is enlarged and to be felt beating in the fifth or even

* *Surgery of the Chest*, p. 393.

† *Diseases of the Heart*, Steel, p. 356.

sixth space at the time of the acme of the effusion, Sibson recommended the selection of a point at the space between the left edge of the ensiform cartilage and the right border of the seventh cartilage in the epigastric region."

It is very seldom that the condition of the patient is such as to make the administration of a general anæsthetic safe, even though it is necessary. The operation may be rendered sufficiently painless by the use of ethyl chloride, local anæsthesia, or the application of ice to the point of proposed puncture, *The physician should make it an invariable rule to precede the introduction of the trocar or the aspirator needle by an exploratory puncture with the hypodermic syringe.* This always enables us to confirm the diagnosis of effusion, and even though the needle wound the heart, there is but little likelihood that such an accident will do any serious damage.

The puncture itself should be preceded by an incision through the skin. The trocar should then be inserted by a steady thrust, carefully guarding it lest it be inserted too far. Under no circumstances should the desire to have the operation over quickly lead to a sudden stab-like movement, in which some control of the depth of the puncture must be lost.

As a rule, all fluid that will flow readily should be removed. It has been urged that this course is objectionable because it may produce dangerous or even fatal syncope. There seems to be no reliable clinical foundation for this objection. Many surgeons rest satisfied with removing but a few ounces, and as this certainly brings great relief, they continue to recommend this practice.

The preparation of the patient should involve all the care to antiseptic details as practiced in major operations, and the puncture wound must be hermetically sealed with antiseptic absorbent cotton and collodion, after which a dressing of sublimate gauze should be applied.

If the pericardial fluid is found to be purulent, it is essential that a rib be resected and the sac thoroughly washed. This is an operation that the general medical man should not attempt.

Chronic Pericarditis.

Under this heading may be included the various pathological lesions of adherent pericardium, adhesive mediastino-pericarditis, and chronic pericarditis with effusion. The first two named are not easy of diagnosis; indeed, they are likely to escape recognition in the absence of symptoms indicative of myocardial insufficiency. In those cases in which the inflammation is a continuation of an acute pericarditis, the treatment must be conducted on the principles already formulated in the section on the treatment of that affection. The chronicity in these cases is usually dependent upon laxness in insisting upon absolute rest. In the tubercular cases, one

must adopt a symptomatic treatment, besides instituting the measures required for the management of tuberculous processes in general.

When the pericarditis is secondary to pathological changes in adjacent structures, as diseased bronchial or mediastinal glands, malignant tumors, pulmonary tuberculosis, pneumonia, etc., again the therapeutic measures have a wide latitude because of the many indications. Still, in most of these cases, we can hope for but little in the way of permanent results.

The perseverance with which treatment must be conducted in cases of adherent pericardium must be governed entirely upon the condition of the patient. In many instances the adhesions are so lax that the myocardial efficiency is not impaired to any perceptible degree. Such cases are better let alone, although it is wise to inform them of their condition in a tactful manner, that proper care be given the heart on the recurrence of a rheumatic fever. We may even go further and recommend that the incidence of an acute illness should be an occasion for insisting upon absolute rest until complete recovery has taken place. By so doing we may hope to limit the extension of the adhesions.

The administration of Digitalis in physiological doses when the adhesions are fresh has much to commend it in theory, although we have no evidence of its efficiency. It has been suggested that this drug, causing more active movements of the heart muscle, must act mechanically to stretch or loosen the adhesions. There can certainly be no objection to this use of the drug for a limited time after recovery from acute pericarditis.

Potassium iodide has been recommended also. Its utility is very doubtful.

In an established case of adherent pericardium, the whole treatment resolves itself into the care of the myocardium. To this end, we may recommend the Schott movements and respiratory gymnastics. The latter are supposed to exert some beneficial influence over the density and tightness of the adhesions.

When myocardial insufficiency is manifested, there is generally an associated disturbance of the digestive system. This demands the prescription of remedies having special action on the liver, stomach, and bowels.

Other remedies can be recommended only on a symptomatic basis according to the case. The pathological condition is purely mechanical, and is beyond the influence of internal medication directed to the adhesions *per se*.

Hydropericardium.

Hydropericardium is almost invariably part of a general dropsy, and is associated with hydrothorax. It is very exceptional for it to reach such an extent as to demand special treatment, because the associated lesions are sufficiently obtrusive to require the physician's full attention. When it of itself seriously endangers life or comfort, paracentesis of the pericar-

dium must be necessary. The operation is essentially palliative, however, and requires repetition. The general medical treatment is that required in cases of hydrothorax and general dropsy dependent upon chronic renal and cardiac disease.

Hæmopericardium.

The effusion of blood into the pericardium can be treated successfully only in those instances in which the hæmorrhage is of traumatic origin. The cases of so-called medical hæmorrhage are almost invariably the result of bursting of aneurysm of the aorta, or rupture of one of the coronary arteries, and usually terminate fatally before the physician arrives upon the scene. As the diagnosis of the fatal condition is by no means assured, the physician must content himself with the adoption of measures for the purpose of stimulating the heart's action. The amount of blood lost is rarely, if ever, sufficient to produce special symptoms.

The cases in which the hæmorrhage has resulted from traumatism offer a much better prognosis. Literature now contains reports of numerous cases in which wounds of the pericardium and heart have been sutured and recovery has followed.

Pyopericardium.

The treatment of pus in the pericardium is exclusively surgical. It consists in the resection of the cartilages of the fifth and sixth ribs after dividing the soft parts 1 cm. to the left of the sternum from the fourth to the seventh ribs, tying the internal mammary artery, and opening and irrigating the pericardium. A drain is then inserted, and the ordinary antiseptic dressing applied.

The same treatment is recommended for pneumopericardium, although some authors recommend simple tapping as a preliminary measure. The latter is not likely to be efficient, as infection almost invariably takes place, and pus collects in the pericardial sac.

The results of operation for pyopericardium have been fairly good, when one considers the serious nature of the lesion. Out of 35 cases collected by Kobert, there were 43 per cent. of recoveries.

Acute Endocarditis.

The tendency of authors at the present day is to regard all cases of acute endocarditis as belonging to one class, because of the difficulty of determining whether certain "border-line cases" belong to the simple or the malignant variety. Therapeutically and clinically, it seems to me that the preservation of the separation of the two varieties is of the greatest importance, although the general measures required in both varieties are practically identical.

Acute Simple Endocarditis.

Owing to the ultimate serious effects of acute endocarditis, the prophylactic treatment is a matter of the greatest importance. This is universally recognized in theory at least so far as the endocarditis following arthritic fever is concerned; hence it is that most of the sufferers in this class receive good attention from the first. But there is another large class of cases which follow diseases ordinarily regarded as innocent, *e.g.*, tonsillitis, chorea, varicella, and measles. So common is the idea that these diseases are attended by no unfortunate after-effects as related to the heart or other organs, physicians seldom pay much attention to their victims during the stage of convalescence. Even with the more serious of the acute infectious diseases which may produce endocarditis, as variola, diphtheria, typhoid fever, and pneumonic fever, the possibility of an existing endocarditis is not sufficiently kept in mind. In the majority of the cases of the above-named diseases, cardiac murmurs, it is true, are due to muscular insufficiency; but that should afford no reason why the smaller number of cases, and these the more serious in their ultimate effects, should be neglected.

So far as medicinal means are concerned, the best preventives are those indicated in the primary illness. Many physicians contend that *Salicylates*, *Colchicum*, *Rhus tox.*, and other remedies, while invaluable in the treatment of an arthritic fever, are of no avail in lessening the percentage of sequential endocarditis. With this opinion I can have no sympathy. Of course, we cannot prove in any given case in which endocarditis did not take place that it would have appeared had no internal medication been prescribed; but one must admit the logic of an assertion that the shortening and mitigation of the course of the primary disorder must have great influence in reducing the frequency of sequelæ. The administration of medicines indicated by the patient's condition and symptoms, the primary disease being regarded as an important item, must be recommended.

Again, I fear we pay too much attention to the iconoclasm of our dear friend the pathologist, who tells us that a endocardium, once damaged by inflammation, can never be restored to a healthy state. Are we sure he is right? He certainly is so far as the cases coming to autopsy are concerned. As to those which "recover," we cannot, of course, speak with certainty. Still I, in common with many other physicians, have treated cases of endocarditis in which the murmur has gradually disappeared under rigid treatment. In many of these valvular disturbances with ruptured compensation appear in later years; but, among the remainder, there is certainly a respectable number in whom a practical recovery is accomplished. Personally, I am fully convinced that were the possibility of limiting the ravages of endocarditis more generally recognized, there would be more enthusiasm manifested in its radical treatment, and fewer permanently damaged hearts would result.

The most important element in the successful treatment of endocarditis is *prolonged and absolute rest*. Every physician recognizes the value of rest in those cases in which the endocarditis complicates a disabling disease, which of itself requires the patient to remain in bed. They recognize it because the patient feels sufficiently ill to obey orders. It is of far greater importance to enforce the rest treatment in the very large but important class of cases in which the primary disease is not disabling, as chorea, arthritic fever of childhood, measles, etc. Several of the most serious valvular lesions I have ever encountered in practice have apparently been the result of the *silly* practice of a very large proportion of physicians of recommending vigorous exercise as a part of the therapy of chorea.

The rest in bed should be carried out with the same degree of strictness already advised in the treatment of pericarditis. It should be maintained for not less than one month following the disappearance of fever. The restoration of privileges should be conducted with the greatest care, and always after a careful study of the effect of such on the murmur and the strength and frequency of the pulse. If one errs, it is better to do so on the side of safety, and make the rest too long rather than too short. The latter may bring a permanently damaged heart; the former, at the worst, can only cause the loss of a few days. The extension of privileges in order consists of sitting up in bed, lying on a couch, sitting up in a chair, receiving properly selected visitors, standing by the side of the bed, walking a few steps, until finally he is permitted to walk about the room. With each promotion, the effect on the rate and quality of the pulse should be noted. All of these precautions may seem absurd to the majority of physicians. They are only such because it has been the custom in the past to neglect the patient convalescent from endocarditis. Too little thought has been had for the tenderness of valves and endocardium recently or partially recovered from inflammation. Analogies in the treatment of other inflammatory affections are forgotten, and the patient is permitted to go about and lay the foundation for future invalidism.

As a part of the "rest treatment of endocarditis," the physician must avoid "over-examining," because he thereby disturbs his patient both mentally and physically. For the same reason, he should not make it a practice of prescribing Digitalis and other cardiac stimulants, because these medicaments cause the valves to undergo a greater strain than they otherwise would. On the other hand, when such indications as pain, restlessness, and insomnia disturb the patient, he should use the great medicinal splint, Morphia. Concerning this drug in endocarditis, there is much to be said in its favor. In the past there have been many unwarranted fears as to the danger of weakening the diseased heart. As a matter of fact, it has been my good fortune many times to find a failing heart wonderfully improved overnight by the rest afforded from a hypodermic injection of one-eighth to one-fourth of a grain of Morphia. Usually, the smaller dose suffices.

The diet of patients with endocarditis should be light but nourishing. The latter quality must be insisted upon. The heart suffers severely when patients are improperly nourished. The constitutional disturbances of a simple endocarditis unassociated with other diseases are very slight. Hence, such patients can be well fed without taxing their digestive and assimilative capacities. If, on the other hand, the general disturbance is severe, or the case is associated with rheumatic fever or other constitutional disease, one must be guided in prescribing a diet by the indications presented. Even then, he must endeavor to maintain the highest possible standard of general nutrition. One needs but little experience in the management of patients with rheumatic fever and endocarditis to learn the rapidity with which a severe anæmia may develop. Common sense teaches us that we should not yield to tradition by starving such patients, but rather that we should feed them to the fullest capacity with which their digestive functions are compatible.

While speaking in this positive way, I must warn against the extreme of overloading the stomach. Many a heart has been badly damaged by such ill-advised procedure. The foods which may be advised are milk and raw eggs in the acute febrile stage. When milk disagrees, it may be peptonized, or the patient should be given nourishing broths thickened with barley or other cereal. If the bulk of such articles seem to be objectionable, boiled fish, broiled or roast chicken, raw-beef scraped, and, in exceptional cases, even the heavier meats, may be prescribed. Foods which experience has demonstrated produce flatulency, as fats, sugars and starches, must be condemned *in toto* or given very sparingly. To avoid distention of the stomach, the quantity of food at each feeding should be relatively small, and the patient should be fed at intervals of three hours.

The restriction of fluids is a debatable question. It has been advised on the theory that excessive drinking increases intravascular pressure. Of this there cannot be said to be any positive clinical evidence. No doubt "excessive" fluids are damaging, as are other excesses. The limitation of fluids below the quantity usually regarded as proper for the healthy individual should be considered seriously before putting it in practice. Endocarditis is commonly associated with a toxæmia (rheumatic fever), and we all know that water is the best eliminant in all such cases. It is even a question with me if it is not advisable to permit the patient to drink water freely just so long as he does not distend his stomach by excesses. In other words, let him allay his thirst at short intervals, but do not let him go to excess in quantity at any one time.

In all cases, the bowels should receive regular attention. This means that a gentle evacuation should be secured each day, preferably by an enema when they fail to respond naturally; by laxative medication if necessary. Severe straining at stool is a menace to good recovery. Violent purgation disturbs physical rest and interferes with digestion.

General hydrotherapy has no place in the treatment of acute endocarditis. The only bathing permissible is that for cleanliness, which must consist of ablutions in bed performed by the nurse. While warm baths do have an undoubted favorable effect on the patient's nervous system, they are contra-indicated by the necessity for absolute rest.

It is otherwise with local hydiatric measures. The application of the ice-bag may be prescribed for the relief of palpitation, pain, and rapid pulse. When, however, the circulation is feeble, it is better to make use of hot applications.

Caton's * treatment by application of small blisters does not seem to have met with general approval, although at one time advocated enthusiastically by many authorities. The general impression now is that the blisters are absolutely valueless, and the discomfort they occasion is too great for any problematic good they may do.

When the heart's action becomes rapid and feeble—a condition that rarely ensues if the patient has been kept at absolute rest from the beginning of the attack—cardiac tonics become necessary. Of these, *Digitalis* is unquestionably the most reliable. If the weakness is comparatively slight, *Strychnia* should first be tried. When employing either of these drugs, the physician should observe every precaution not to overdose the patient. The only stimulation required is that which brings the heart's action within reasonable bounds of safety.

Medicines.—*Aconite* is unquestionably the remedy most frequently indicated in cases coming under treatment early in their course. It should never be given in large doses, as it is depressing to the myocardium. The symptoms especially calling for it include high fever with dry skin, anxiety, restlessness, palpitation, thirst, cutting pains, dyspnœa, active pulmonary congestion, and dark urine.

Spigelia is the principal remedy for the fully developed endocarditis, especially in cases of rheumatic origin. Some physicians prescribe it as the routine remedy in such cases. Hughes refers to the success of Fleishmann, who prescribed it indiscriminately in all acute inflammatory affections of the heart. The patient suffers from præcordial pains which extend into the arms and neck; the pulse may be irregular or intermittent; dyspnœa is frequently present. Jousset gives as the special symptoms for *Spigelia*, agonizing pain in the præcordium, which radiates along the phrenic nerves and those of the brachial plexus; here the similarity to angina pectoris is well marked. The irregular pulse, its intermittence, threatening syncope, the considerable dyspnœa complete the clinical picture. If the accelerated pulse is replaced by a slowness, this remedy is also certainly indicated.

Veratrum viride has been prescribed, like *Aconite*, in the early stages,

* *The Prevention of Valvular Disease of the Heart*, by Richard Caton, M.D., F. R. C. P., London, 1900.

and is highly recommended by Hale. Rapid pulse and pulmonary congestion are strong indications. Like Aconite, it should not be administered in large doses because of its depressing effects on the heart. Fever is high; respiration rapid; burning pain in chest; congestion to the head; violent throbbing in the neck and chest; fluttering feeling about the heart; great weakness. The symptomatology of *Veratrum viride* to me suggests its applicability to the early stage of malignant endocarditis rather than to the simple variety.

Cactus grandiflorus should be prescribed when there is præcordial anxiety, associated with a sensation of constriction about the heart, as if that organ had been grasped by an iron band, and weak, irregular pulse.

Bryonia is indicated in endocarditis very largely upon pathological conditions. It is one of our best remedies for arthritic fever, and it has a strong affinity for serous membranes. Hale recommends that it be prescribed in alternation with Aconite or *Veratrum viride*. Its special symptoms include frontal or occipital headache, with aggravation of the pain from the slightest movements, dyspnœa, and valvular murmurs.

Convallaria maialis is limited in its action to cases in which the fever has disappeared, but the heart is acting irregularly or with undue irritability. Dyspnœa is present, and is out of all proportion to the cardiac lesions. Late in the course of the disease, when the heart muscle is weak, it may be prescribed as a stimulant when *Digitalis* disagrees or fails to do what is expected of it. *Adonis vernalis* is likewise used by some physicians as a substitute for *Digitalis* when that remedy fails. The dose is one to two drops of the fluid extract three times daily.

Rhus tox., like *Bryonia*, is useful in the cases following rheumatic fever, when there are great restlessness and general debility which are relieved by motion.

Cimicifuga is the best remedy for the endocarditis accompanying or following chorea, although it may also be of benefit in rheumatic cases. Its special symptomatic indication is severe pain in the large muscles of the body. Other symptoms include frontal headache, pain in the vertex, which has been compared to a sensation as if the top of the head would fly off, aching in the eyes, pain in the left side, under the nipple and extending down the left arm.

Colchicum, as quoted by Jousset, was recommended by Petroz "during the acute stage of endocarditis when this affection occurs during the course of acute articular rheumatism, and when Aconite fails." There are violent cutting and stinging pains in the chest with great oppression and dyspnœa, and sensation as if the chest was squeezed by a tight bandage; heart's action weak, pulse threadlike. Vertigo on assuming the upright posture.

Belladonna is suggested by the presence of its characteristic circulatory symptoms. It is an important remedy in the endocarditis of children.

Arsenic.—Jousset * says of this remedy that it is more indicated in acute than chronic endocarditis; its place is where the action of Aconite and Cactus terminate, and when the dyspnœa, weak and irregular pulse, with considerable diminution of the arterial tension indicate a state of great gravity. Anxiety with agitation and nocturnal aggravation are confirmatory symptoms of Arsenic. A commencing anasarca, congestion of the liver, and a certain degree of albuminuria complete the picture of symptoms. The third trituration is his favorite potency.

Several text-books mention Glonoin and Nitrite of amyl as possible remedies in cases of cardiac failure. They must be regarded as *possible* only; to me they are decidedly problematical. These medicines are vasodilators, and should be employed only when the circulation is laboring under high intra-vascular pressure, a state of affairs that rarely occurs in acute endocarditis. When vascular pressure is low, as it not infrequently is, they may be prescribed in potency to relieve that condition; but they should practically never be given at such times with the idea of toning up a failing circulation.

Laurocerasus, though more commonly used in cardiac neuroses, may be prescribed in endocarditis for such nervous phenomena as spasmodic contractions of the throat and chest, great nervous excitement, and præcordial pain.

During the stage of convalescence, the following remedies have been recommended as tending to lessen the subsequent damage to the injured valves: *Graphites*, *Sulphur*, *Kali hyd.*, *Strontium iod.*, *Iodine*, *Spongia*, *Baryta mur.*, and *Arsenicum iod.*

Ulcerative Endocarditis.

Ulcerative endocarditis is a much more serious disease than is the simple variety. All of the hygienic precautions advised in the treatment of the simple variety must be instituted in the case of patients with the malignant disorder. In addition, we are often obliged to resort to stimulation by the administration of alcoholics, especially brandy. The use of Digitalis and other cardiac stimulants should be condemned, excepting when needed to aid a flagging heart. Special attention must be paid to the condition of the alimentary tract, as good nutrition must increase the patient's powers of resistance. Thus far, medicinal treatment has not been followed by any wonderful percentage of recoveries. Some patients do recover, but so few are they that we are obliged to ask ourselves if it is not due to the powers of nature and not to our skill.

The disease being essentially septic in character, the treatment must in a measure follow the lines laid down in the section on septicæmia. We must search for the cause of the heart lesion, and remove it whenever

* *L'Art Medical*, January, 1892.

possible. The internal administration of antiseptic remedies has not met with any great success, though Sansom reports one undoubted case in which the *Sulphocarbonate of soda* in half drachm doses recovered. The medicines which offer the best prospects are the snake poisons, particularly *Naja*, *Lachesis*, *Crotalus*, *Arsenicum*, and *Secale*.

Arsenicum owes its value not so much to any specific action on the heart as to its influence over septic processes generally. Its pathogenesis covers the general symptoms of septic endocarditis, including feeble, irregular pulse, anguish and restlessness, cachexia, great dyspnœa, thirst, etc.

Of the action of the snake poisons Jousset* remarks: "The snake-poisons produce an extremely grave state. The heart's action is increased; the pressure in the arteries falls from the very beginning; the pulse increases to fall again in frequency; the patient's skin becomes covered with a cold, clammy sweat; his urine is suppressed; involuntary passage of the stools, and with violent colic, vomiting; a lipothymic state sets in, and death takes place from cessation of the heart's action."

Lachesis exerts an influence alike upon the heart, the nervous system, and the septic condition. The patient has paroxysms of suffocation and syncope, more or less constant dyspnœa, weak pulse, rapid and intermittent pulse, hæmaturia, hæmoptysis, albuminuria, etc.

Crotalus differs from *Lachesis* in that it is indicated more by the hæmorrhagic complications, which take place not only from the various cavities, but are manifested as numerous ecchymoses.

Naja is the favorite remedy of many of the English homœopaths.

Echinacea is recommended by Blackwood,† who says: "From the proving and clinical observations, comes the evidence that we have here a great remedy in septic conditions. It has produced loss of appetite with weakness in the stomach and formation of large quantities of gas that pass both up and down; there is pain in the right hypochondrium, with loose, yellow, and very offensive stools, that are followed by great exhaustion. The face becomes pale, the pulse slow, and great weakness is complained of."

Secale was recommended by Lilienthal on the symptoms or conditions of emaciation, debility, emboli, cold extremities, hæmatemesis, dyspnœa, weakness of pulse with irregularity of same.

Aconite and *Sulphate of Quinine* are recommended by Jousset.† He says: "In this combination is found the treatment which we have indicated in the purulent diathesis. *Aconitum* corresponds to the high fever with great anxiety and restlessness; *Sulphate of Quinine* to the intermittence with symptoms of malignity which we have termed perniciousness. *Sulphate of Quinine* will be further indicated in the treatment of malignant

* *L'Art Medical*, January, 1892.

† *Diseases of the Heart*, p. 128.

‡ *Practice of Medicine*, p. 849.

endocarditis by the cardiac symptoms produced by the toxic doses. Thus, at the first stage, very short—during which the pulse is accelerated and the fever increased—there is soon noticed slowing and weakness of the pulse with subsidence of temperature. At a more advanced stage the pulse becomes small, irregular, with lypothymic state, great coldness, cold sweat, face and extremities purple, absolute loss of muscular strength; finally, complete collapse, pulse wanting, coldness and syncope. These combined symptoms make one think of *Digitalis*, and confirm the indications of Sulphate of Quinine in the treatment of malignant endocarditis."

In recent years, the serum treatment of malignant endocarditis has been practiced quite extensively with some degree of success. Inasmuch as various bacteria are the origin of the disease, we cannot expect any one serum to be a specific. Undoubtedly, the majority of cases are streptococcic in origin. Hence, the anti-streptococcic serum should be used when there are no indications for another. Most of the cases thus far treated have been near the end when the remedy was employed as a last resort. Even then some cures have resulted. It is more than likely that we would have much better results if the serum treatment was begun early. In my own experience, limited to two cases, the fever disappeared, and the patient appeared to be progressing favorably when death resulted suddenly from pulmonary and cerebral embolism respectively.

In cases complicating or succeeding pneumonia, the anti-pneumococcic serum should be tried. With this I have no experience.

There can be no possible objection to beginning the serum treatment early, for even though it fails, it can do no possible harm.

Valvular Lesions of the Heart.

The hygienic and medicinal treatment of valvular lesions may be described most practically by dividing the cases into three classes, as follows: 1. Those in which compensation is perfect. 2. Those in which compensation is imperfect. 3. Those in which compensation has been broken or has not been established.

1. **Cases in which Compensation is Perfect.**—It is in this class of cases in which physicians make the mistakes most likely to damage their reputations and make the lives of their patients miserable. There are few things more lamentable than the misery occasioned by the announcement of an accidentally discovered valvular lesion, notwithstanding the fact that there are many persons who have led successful lives with more or less badly damaged hearts. Such misery is intensified by the too frequent advice of stringent regulations as to exertion, diet, etc., and the damage incurred by the unnecessary administration of heart tonics.

It is a good practical principle to regard all cases of valvular disease in which compensation is perfect as requiring a little sound advice and no

drug treatment. Why should we prescribe remedies under such circumstances? Compensation being perfect, we have no symptoms to relieve. We can only advise the patient how to live without putting any unnecessary strain upon a damaged heart.

The management of the patient demands that the physician have good judgment as to the prognostic factors bearing upon the case. If it so happens that the lesion is one which is not likely to give much if any trouble, the patient's knowledge of that fact will add greatly to his comfort of living. If, on the other hand, conditions are such as to suggest the possibility or probability of early rupture of compensation, the early enforcement of treatment will delay or prevent such an accident and life is prolonged. It is important then that we have good working ideas of the principles involved in the prognosis of valvular lesions.

In the first place, the physician must first make a correct diagnosis, which will include a knowledge of the lesion or lesions, and the influence the same have exerted upon the various chambers of the heart. He must endeavor to determine the cause of the lesion and the time it has existed. He must be acquainted with the usual course pursued by such lesions. He must study the effects of exercise and the various duties of life upon the functions of the diseased heart. Finally, he must study the patient himself, as to temperament, disease tendency, etc.

(a) *The Influence of the Particular Lesion on Prognosis.*—Opinions differ as to the relative danger of the different valvular lesions. Skerritt* enunciated the general principle that "the worst results follow those lesions which directly obstruct the circulation behind them," and quoted approvingly Walsh's arrangement as to the relative danger of each, the most serious being mentioned first: Tricuspid regurgitation, mitral regurgitation, aortic regurgitation, pulmonary constriction, and aortic constriction. Skerritt furthermore contends that combined lesions are by no means an unmixed evil, and asserts that there is less danger of sudden death when aortic regurgitation is combined with mitral insufficiency. Tricuspid regurgitation has often been spoken of as having a safety-valve action in mitral insufficiency in that it relieves the increased pulmonary pressure of that lesion. Other authors hold different views, and in most instances they are right in assuming that multiplicity of valves damaged throws greater strain upon the myocardium, and makes the danger to life more imminent.

Broadbent, who is quoted approvingly by Babcock, believes aortic regurgitation to be the most dangerous of the lesions involving the left side of the heart, and mitral regurgitation as being the least so. Aortic stenosis and mitral stenosis he regards as occupying an intermediate position, mitral stenosis being the more serious lesion of the two.

* *The Lancet*, 1897, vol. ii, p. 1166.

(b) *The Influence of the Alteration in Size of the Various Chambers on Prognosis.*—Compensation for valvular lesions is effected by dilatation and hypertrophy of the various cardiac chambers, this or that one bearing the brunt of the changes according to the particular lesion or lesions present. The recognition and the determination of the location of such hypertrophy and dilatation afford us our most valuable means for determining the extent to which the cardiac pump is damaged. Experience has taught us long since that the character and intensity of the murmur are utterly valueless as elements of prognosis. On the other hand, we know that if the lesion produce but little interference with the circulation, there can be but slight change in the size of the ventricles and auricles. Again, the presence of hypertrophy appropriate to the lesion in hand acquaints us with the fact that the latter is more or less severe; furthermore, by determining its extent from time to time, one can make comparisons and determine the stability of the compensation already established.

The information thus far determined has related entirely to physical examination. The scientific interest attached to the problem has led in the past to the neglect of other data, which the practical physician is accustomed, and rightly, too, to look upon as of greater importance than the physical signs.

(c) *The Influence of the Cause of the Lesion on Prognosis.*—The lesion to which the valvular defect is due may be one likely of repetition, it may be of a progressive character, or its nature is such that it is not likely to recur. It is manifest that cases dependent upon a condition which is rarely, if ever, repeated, as scarlet fever, must present a better prognosis than one originating in rheumatic fever, for the latter disease is very liable to occur more than once; and if it does so, the chances are all in favor of its causing a renewal of the endocardial inflammation. Etiological conditions which are progressive, as gout, renal disease, and arterial degeneration, must produce valvular lesions which, like the originating factor, usually proceed from bad to worse.

(d) *The Influence of Duration upon the Prognosis.*—It is generally recognized that any one valvular lesion or combination of lesions is capable of running a course ranging from a few months on the one extreme to many years on the other. One cannot say *a priori* just how long a given case is likely to go without rupture of compensation. When, however, the physician's examination enables him to determine just how long the lesion has already existed, and the physical signs and the condition of the cardiac functions have acquainted him with the progress already made, it becomes easy to state approximately whether the case is one liable to pursue a benign or a rapidly progressive course. Not infrequently we meet with cases in which a physical examination, undertaken in reference to life insurance or to explain symptoms other than cardiac from which the patient suffers,

discovers a heart murmur. It is in just this class of cases that we find the patient made panicky by the unexpected diagnosis. Experience has shown that valvular defects thus discovered by accident offer a favorable prognosis, providing, of course, there is an absence of signs and symptoms to show a serious state of affairs.

(e) *The Influence of Exercise on the Cardiac Functions as a Prognostic Factor.*—The term compensation, as applied to valvular heart disease, is, after all, but a relative one. We use it to indicate that, under ordinary conditions of life, the patient experiences little or no discomfort. While it goes without contradiction that a disabled heart, no matter how well compensated, should never be subjected to undue strain, it is nevertheless of importance to note the influence of exercise or physical and mental activity upon the rapidity of the pulse and the ease of respiration. Given cases in which the slightest increased exertion causes shortness of breath, and we must assume that the outlook is more unfavorable than in those who can undergo such exertion without the slightest difficulty.

It is well known that digestive disturbances in particular are prone to disturb a diseased heart. Hence, its behavior when gastro-intestinal symptoms are present must be accepted as having an important value. The behavior of a damaged heart in the course of acute disease is a matter of practical interest, although we must admit that unless it serves the patient well, the acute affection is likely to throw additional strain upon it, and still further impair its efficiency.

(f) *The Personal Equation in Prognosis.*—Under this heading may be included the age, temperament, sex, occupation, surroundings and the association of other than heart diseases.

(i) *Age.*—Extremes of life, *i. e.*, childhood and old age, influence the prognosis of heart diseases unfavorably. In children, we find the prognosis to be more unfavorable because of our inability to control them efficiently during an acute endocarditis; hence, the resulting lesions are likely to be of a more severe grade. The rheumatic fever which gives rise to the endocarditis is often so mild in its manifestations as to escape recognition almost entirely, excepting in the presence of good observers. Their habits as to physical activity and their lack of attention to the same on the heart and respiration tends to early rupture of compensation. On the other hand, I have seen cases in which great harm has been done on the part of parents by care amounting almost to the hysterical. The restriction by which the little ones have been hemmed in tend to make them hot-house plants and thus liable to intercurrent illnesses, especially of the respiratory organs.

In old age, the prognosis is rendered unfavorable by the degenerative processes natural to that time of life. Repair is tardy, and even when compensation is established, it is readily ruptured.

(ii) *Temperament*.—Undoubtedly, the patient's temperament has an important bearing on the progress of the disease, as it does also upon the thoroughness with which he carries out the physician's directions. Lack of stability, impetuous disposition, rebelliousness under restraint, quick temper, impulsiveness, all tend to aggravate the outlook, while placidity of disposition aid the establishment of compensation, all tend to its preservation.

(iii) *Sex*.—The prognosis in women is better than in men, other things being equal. This is due to the fact that the temperament of women makes them more philosophical in the presence of severe and trying illnesses, and also to their less liability to exposure, over-exertion, and formation of bad habits. On the other hand, the presence of heart disease in women is aggravated by pregnancy and labor, and in the young by chlorosis.

(iv) *Occupation*.—Occupations which entail great physical and prolonged physical labor tend to make the prognosis of cardiac disease more unfavorable.

(v) *Home Surroundings*.—The question of home surroundings may be considered under two separate headings. The first of these relates to the patient's ability to possess himself of those comforts which tend to ease and happiness of mind and comfort of body. The second refers to the character and make up of the family circle. There are some men and women whose fussy, unreasonable temperaments make the recovery of anybody associated with them an absolute impossibility. Truly, some people are unfortunate in choosing their relations.

(vi) *The Association with Other Diseases*.—Reference has already been made to this subject. It now remains to speak only of the importance of recurrent attacks of acute bronchitis in the cardiopath. These, by the production of pulmonary congestion, throw greater strain upon diseased mitral valves, and make the prognosis more serious.

Digestive disturbances act unfavorably by the production of flatus, as already stated, and the lessened facilities for the maintenance of a high standard of bodily nutrition.

After the above somewhat lengthy remarks on the prognosis of valvular lesions of the heart, we are prepared to discuss the

Hygienic and general management of patients in whom compensation has been established. There can be no medicinal treatment for compensated cases, because the absence of symptoms deprives us of the necessity for such prescriptions, and gives no foundation upon which to work in this direction.

The first question that arises when a valvular defect is discovered is the advisability of making the patient acquainted with the condition. This matter has been argued *pro et con*, and much has been said respecting the

ability of the patient to accept the information philosophically. Little is ever said as to the tact of the physician imparting the information. I believe that with very few exceptions, the best and wisest course is to make a plain statement of the facts, otherwise the patient may conduct himself in a way that will surely lead to broken compensation at an early date; and when that unfortunate event takes place, the physician who made the examination will surely be censured. It is very well known that the majority of cardiac murmurs never amount to anything serious, and yet the individuals who seem to lose their heads the easiest are physicians and medical students. Perhaps this is because their common sense is too quickly assumed, and the information is given with a too brutal frankness. There are, it is true, a few highly neurotic subjects to whom the imparting of the information may prove disastrous. The greatest danger lies in dealing with men of hypochondriacal temperament. In their cases, the information frequently intensifies their broodings, and while I believe it never produces a melancholia or well-established hypochondriasis, it may intensify such conditions should they supervene. It has been my experience to meet many of these patients in private practice, and they have laid great stress on the fact that a previous physician had diagnosed an organically diseased heart. In the vast majority of the cases my examinations discovered nothing more than the neurotic heart; but such assurances have rarely been accepted with good grace. Neuro-cardial murmurs are so common in these subjects that I believe it to be a good practice when dealing with the morbidly inclined to say nothing about the murmur, for the chances are all in favor of the symptom being functional.

With the majority of patients the best practice is to inform them of the existence of the murmur, but to minimize its danger. Of course, the patient should be kept under observation. If subsequent examinations discover that the patient is leading a life prejudicial to his safety, his conduct may be restricted without subjecting him to the great shock which follows the announcement of the condition and the enforcement of suitable restrictions in physical activity and habits.

When it so happens that the patient is one who leads a notoriously unhygienic existence, indulging to excess in athletics, alcohol, tobacco, or venery, and the prospects of securing his co-operation are small, it is often wise to go to the extreme of magnifying the effects of the lesion that he may bring to bear greater self-control.

When the valvular lesion is but one of the clinical phases of an otherwise incurable illness, the best course is to say nothing to the patient; though it may be wise, for self-protection, to let some member of the family know of its existence.

In all cases in which the diagnosis of an *organic* lesion is doubtful, the patient should receive the benefit of that doubt, and the physician should

remain silent. If subsequent examinations demonstrate the organic nature of the murmur beyond all doubt, then it will be time to act.

The question of *rest and exercise* is beyond all doubt the most important one for the cardiac patient. It is, moreover, one which cannot be settled by any rule of thumb. The nearest I have ever been able to give directions in a few words that the patient will understand, is that all exercise which does not cause interference with respiration, or force the patient to open his mouth to breathe with comfort is not likely to do any damage. To the physician, this direction may be amplified by adding that care must be taken to note the influence of exercise on the quality and frequency of the pulse—a part of the question which can never be submitted to any but physicians, trained nurses, and a few sensible laymen.

Exercise for its own sake is not to be advised as a remedy. It is never wise to restrict the patient in the performance of movements necessary in following his daily avocation; nor is it proper to deny him all outdoor pleasure. Even those of us who are possessed of hearts believed to be healthy go to extremes in sports and recreation; and some freedom must be permitted the cardiopath. We are within the bounds of reason if we forbid competitive athletics of all kinds, for such demand great physical exertion, which is usually carried to the extreme of endurance. Games like tennis, football, base-ball, and basket-ball, must be forbidden. Golf, among the out-door games, is best adapted to cardiac patients, but is not within the means of the masses. Fishing is within the capabilities of all; and many can go on light gunning trips. Bicycling may be permitted to those who are not made breathless thereby; but they must not permit themselves to climb hills. They should remember the comforting adage, "walking is good."

In every case, the patient's previous habits must be considered. It is folly to say anything about sports to a man who does not care for them, and who never had the physical development to indulge. Really, one can give the best advice if he makes careful note of his patient's habits from day to day, after which common sense will lead him to lay down the proper restrictions. "Know where you are at" is a good motto.

As to rest, it is important that the patient take a certain amount of rest each day, the duration of the same being graded according to his needs. It is certainly a good practice to enforce rest for one-half to one hour after the principal meals of the day when the patient's occupation will permit.

Advice as to the regulation of rest and exercise must be modified according to the patient's age. Thus, in persons who have reached middle life or beyond, degenerative changes are not unlikely to be present, so that violent exertion may readily produce irreparable damage.

The **occupation** of the patient comes next in importance to the ques-

tion of exercise and rest ; indeed, it may be regarded as but a detail of the latter. It is impossible with the many existing means of employment presenting all phases of physical activity for me to lay down impracticable arbitrary rules. In many cases, indeed in the vast majority, the patient has been engaged at his present occupation for so many years that he cannot take up another. The laws of political economy forbid this. A youthful patient may, in a measure, adapt himself to his disabled condition by selecting an employment which entails comparatively little strain on the heart. But even here we are again working against natural laws. The employé aspires to achievement, and must forge ahead in his work to get it. If he does not do so, he is of no use to his employer. We must remember, also, that vocations and business changes are more frequently the results of opportunities afforded by the accidental changes of a business life, and the necessities of the worker, than by any determination of the latter that he will confine himself to some particular line.

The ideal occupation for the cardiopath demands light physical labor, freedom from worry, fresh air, and good food. Just the kind of work that is hard to get !

The diet of the cardiopath should never be restricted for the sake of the valvular disease *per se*. The myocardium suffers very readily when the patient is underfed. On the other hand, the patient must follow the dictum of common sense and not damage his digestive apparatus by overeating. A distended stomach throws considerable strain on even a slightly damaged heart. Particular harm can follow indigestion with flatulence. Another desideratum is that the patient shall not permit himself to lay on too much flesh. On the other hand, he must make some effort to keep his weight up to a point about the normal standard for his height.

A good general rule is for cardiopaths to take a generous mixed diet, such as would be followed by any sensible individual. He should avoid falling into dietetic fads. Circumstances, such as constipation, diarrhoea, and attacks of indigestion, may demand temporary changes ; but in all cases, the importance of adequate nourishment for the patient and his myocardium must be kept in mind.

The practice of drink restriction, as applied by eminent authorities to the treatment of heart affections, does not seem to me to have any place in the management of a patient with a fully compensated heart. On the contrary, it is conceivable that such a plan of treatment is capable of being harmful. Water is the best eliminant of waste materials at our disposal. The patient must take the normal quantity of food in order to maintain his nutrition. It follows, therefore, that he must partake of water in quantities usually accepted as standard, *e. g.*, two or three pints daily. Probably the best practice is to say nothing to the patient on this subject, unless concentrated urine and symptoms indicative of auto-intoxication are present, in

which case the hygienic rules governing those conditions should be put in force.

It is important that the cardiopath have regular movements of the bowels, because the retention of fæcal matter causes auto-intoxication and increased vascular pressure. Constipation can, as a rule, be regulated by diet and the proper use of water. If these measures fail, we may be obliged to prescribe as directed in the section on the Treatment of Constipation.

Clothing.—There are two excellent reasons for giving specific instructions to the cardiac patient as to the proper methods of dressing. The first relates to the possibility of reawakening a rheumatic fever and acute endocarditis, and the second to the avoidance of sudden changes in vascular pressure. To avoid the first mishap, the patient should follow the rules already laid down for the guidance of the victims of rheumatic fever. In all cases, excepting in warm weather, woolen garments should be worn next to the skin. Attention should be paid to changing their weight according to weather conditions, for it is almost as harmful to keep the patient bathed in a profuse perspiration as it is to permit him to be exposed to undue cold. The extremities must be kept warm during cold and damp weather by suitably adapted gloves and shoes. All clothing should be worn loose, so as not to interfere with the circulation. Special attention must be paid to the avoidance of tight clothing about the chest and abdomen, otherwise respiration is liable to be embarrassed and the abdominal viscera become passively congested.

Habits.—Habits to be considered when dealing with a heart patient include addiction to alcohol, tobacco, and venery. Moderate indulgence in alcoholic beverages is probably not harmful, excepting in specific instances. When, however, the patient permits himself to pass the boundaries of moderation, even to a slight extent, there can be no doubt of the harm he is doing himself. Under no circumstances should the patient permit debauchery, even for a short time. As to the advantage of prescribing alcoholics as medicines in compensated hearts, there is some difference of opinion. The trend of authority is against their use, excepting when called for by some specific indication, to promote appetite in the under-nourished and poorly fed. Even with patients of this character, the advice to take whisky must be given with considerable discrimination, for, with many individuals, it may be the means of starting the alcohol habit.

So far as tobacco is concerned, there can be doubt about its inability to do good, and its abundant capabilities for harm. Whenever possible, its use should be discontinued *in toto*. In every case, there should be a strong stand taken against its use excepting in great moderation. It is doubtful, however, if tobacco is as injurious in cases of valvular disease as it is in angina pectoris, degenerations of the myocardium, and the cardiac neuroses.

Sexual indulgence may do harm by reason of the intense exertion and excitement during the act, and the exhaustion following too frequent repetition. Advice must be given covering these points.

Marriage.—From the standpoint of the male patient, marriage is, as a rule, to be commended, providing that he practice intercourse moderately. His chances of living longer are also assured in that he surrounds himself with domestic comforts, which he cannot obtain otherwise. His marriage may be objected to with good reasons if his general nutrition is poor, and there is a likelihood of his bringing puny children into the world, especially so if he gives a strong rheumatic history. The social question of the possibility of a short life with a family of small children thrown on the world in case of his death must also be considered; although this is a family rather than a medical matter.

In the case of women, we have the added dangers of pregnancy and parturition. Still, it is impossible to lay down too general rules, for all have observed cases in which women have borne several children without serious mishaps. Much depends upon her surroundings when she establishes her own household. If finances are such as to enable her to take good care of herself, the risk will be much less than if she is not only a mother but a household drudge. The danger is the greatest in cases of mitral stenosis, especially towards the later months of pregnancy. Much, of course, depends upon the stability and extent of the compensation. When there is evidence in the early days of the pregnancy that the heart is not standing up well under the ordeal, as shown by rapid pulse and breathlessness, prudence demands that abortion be performed. To defer until a probability becomes a necessity may result in the loss of a life, for when that stage is reached, we have before us the choice of two almost inevitably fatal conditions, the continuance of the pregnancy and the termination in natural labor, and the operation above recommended. I can speak feelingly on this subject, for as I write I have still strongly in mind a case of mitral stenosis, in which Dr. W. D. Carter and I were associated. When the storm broke, it was too late to interfere and the patient died at the end of her seventh month.

Bathing should be considered solely from the standpoint of cleanliness. Turkish, Russian, and shower baths, cold plunges, prolonged warm immersion, etc., which are recommended indiscriminately by some physicians can do no good, and often no harm. Of the Nauheim baths, I will speak *in extenso* when dealing with the subject of myocardial degenerations.

Care of Intercurrent Illnesses.—The dangerous illnesses in patients with valvular defects are rheumatic fever, bronchitis, pneumonia, and digestive disturbances. Diseases of the respiratory tract are especially dangerous to patients with mitral lesions, attacks of bronchitis, which in the healthy would be mere trivial matters, often terminate fatally. When the

family circumstances will permit, and the exigencies of the case demand it, the patient may be sent south during the cold and blustry months of February and March with advantage. It is a good working rule to treat all of these intercurrent illnesses in the beginning as if they were of a dangerous character, and insist upon the rigid supervision entailed by severe illnesses generally. After all, the physician has but little influence in settling the question of marriage. So far as the contracting parties are concerned, his advice is asked in the expectation that he will give assent. Should he decide otherwise, they very commonly do as they please.

2. Cases of Valvular Lesion in which Compensation is Imperfect or Completely Broken.—The most important element in the treatment of ruptured compensation is rest. In those cases in which the break is but partial, and the patient experiences only slight dyspnoea on exertion, we may, if circumstances demand it, permit the patient to rest during the day in a reclining chair. Nevertheless, it is a good working rule to regard all cases as equally bad, and insist upon a prolonged stay in bed, *i. e.*, until three or four weeks after the disappearance of all symptoms have elapsed.

When the symptoms of cardiac inadequacy are severe, it is not a difficult matter to enforce the rest treatment, because the patient's condition is such that he cannot do otherwise than obey. But even in these, physicians are often lax in not insisting upon rest down to its most minute detail. By details, I mean the use of the bed-pan for defecation and urination, abstinence from all ordinary movements in bed, such, for example, as are entailed by the acts of feeding and drinking, and the exclusion of all company. If the dyspnoea is extreme, it is necessary to permit the patient to be propped up either in bed or in a chair, but preferably the former.

Simple as is the doctrine of rest in the treatment of ruptured compensation, it has been my lot to see many cases in which it was enforced in a very hap-hazard manner. The excuse given by physicians, nurses and family for such loose methods has always been the inability of the patient to tolerate such restrictions. My experience has taught me that with very few exceptions, a plain matter-of-fact talk with the patient, explaining the necessity for giving the heart every possible opportunity for rest, brings obedience as its reward. Such talks can be firm and unequivocal without being brutal.

In very many instances, a period of ten days of rest in association with indicated remedies brings about the disappearance of all cardiac symptoms. Should it not do so, one of the cardiac tonics, especially Digitalis, should be administered. Of this subject I will speak further when I have finished the description of the hygienic details.

Diet.—It is impossible to formulate an arbitrary diet list for the patient with ruptured compensation. Patients and their deficiencies vary so

that the plan which proves efficacious in one is not unlikely to disagree with another. The myocardium suffers when food is inadequate. Hence, it is important that the patient should be given as much nutriment as he can assimilate without discomfort. In following out this object, it is unwise to administer large quantities of nourishment which the patient cannot digest. A small quantity properly taken care of by the digestive apparatus does more good than a superabundance which deranges digestion. In all cases of ruptured compensation there is passive congestion of the abdominal viscera. Necessarily, then, the digestive capacity must be low.

Considering the most severe cases first, *i. e.*, those characterized or attended by dyspnoea, dropsy, etc., the best nutriment for a time, at least, is milk. If patients contend that it disagrees, it may be given peptonized, or, to prevent the formation of large curds in the stomach, it may be diluted with one-third of its bulk of barley water. In still other cases, it may be of advantage to give a milk-cream mixture, two-thirds of the former and one-third of the latter. This mixture has the great advantage of furnishing a greater amount of nutriment than does milk alone. It is rarely good practice to continue the exclusive milk diet for more than a few days, nor is it necessary to do so in the cases which are likely to improve. Care should be observed that the patient be not overfed either in quantity or frequency. Eight ounces every four hours represents about the proper dosage. The peculiarities of individual cases may force us to depart from this standard. Sometimes we find that the milk itself is not tolerated, in which case we may administer equal parts of cream and whey or even the whey alone. Again we may find it necessary to give very small quantities at very short intervals.

The exclusive milk diet is often found objectionable after a time, because it floods the circulatory system with too much water and raises vascular pressure, and gives the heart unnecessary labor. To avoid this, we must add to the dietary, as soon as possible, some solid nutriments, especially eggs, meat, and vegetables. It is in this extension of the diet that the nicest judgment is required. It is here, too, that we find the greatest possible differences in views held by authorities. This being the case, we are obliged to settle the question by assuming the position that each case must be treated on its merits, and not according to preconceived notions.

Of late years, it has been a very popular practice to advise dry diet or drink restriction. The advantage claimed for this method is that distention of the stomach is avoided, and the reduced quantity of fluid in the circulation relieves the cardio-vascular system of unnecessary labor. The theory here involved seems to be correct, and has the advocacy of Oertel, von Noorden, and other eminent clinicians. In practice, it does not always work out, because patients do not tolerate the drink restriction, and it is not always possible to secure the proper persons to supervise the treat-

ment. In enforcing drink restriction, the best rule for guidance is based upon the comparison of the daily intake and output of fluids. If the latter is in excess, the patient should be limited to the amount of fluids taken. In some severe cases, it may be advisable to withdraw fluids and food alike for twenty-four hours. During the summer months, it is essential to permit more water than at other times of the year to compensate for the loss incurred by sweating. It is also wise to permit larger quantities of water when the output is temporarily increased, as by vomiting, diarrhœa, and polyuria. If the gastric irritability is extreme, it may prove necessary to administer food and drink by the rectum for a time.

In all cases, care must be taken that the stomach is not unduly distended. This does harm by acting mechanically and by producing an indigestion with its resultant formation of toxins. It must be borne in mind that the patient being at absolute rest, he cannot take care of the amount of food usually required for a person of his weight. *All patients must be instructed to stop eating while they still feel themselves capable of eating more.* This is a very important injunction, because some patients have insatiable appetites, especially those who are only partially disabled.

Of solid foods, I am strongly in favor of prescribing bread and butter, the former to be a day old. Although bread belongs to the carbohydrates—a class of foods to be used with caution in patients with uncompensated valvular lesions—it is almost invariably well borne, unless taken in undue quantity. The addition of butter makes it highly nutritious. Some authorities advise against the use of fats. While they may be right so far as the taking of the majority of hydrocarbons is concerned, I feel certain that most patients are better off when they can partake of those that are easily digested, as butter, and the small portion of fat that “goes with their meats.”

Very few meats need be prohibited. When outlining those of which the patient may partake, due attention must be paid to their digestibility. pork, ham, and veal being especially objectionable. More important than the kind of meat is the way it is prepared. Fried meats must be forbidden absolutely. Broiled and roasted meats are permissible, but should always be served without the addition of gravies or sauces. In the patients whose digestive powers are weak, we should advise the lighter animal foods, as chicken, squabs, fish, and oysters.

Starchy foods are usually objectionable, excepting in small quantities, owing to the readiness with which they lead to the formation of gas. Exception to this statement has already been taken as to bread and its derivatives (toast, zwiebach, pulled bread, crackers, etc.). The starchy vegetables most to be advised are baked potatoes and boiled rice.

Green vegetables usually agree, and should be prescribed because of their nourishing properties.

Soups and broths are rarely advisable. Their nutritive power is low, and they are rich in extractives, which are nearly always prejudicial. *Purees* are quite nourishing, but like soups, etc., are objectionable when it is desirable to restrict the amount of liquids taken.

Patients may be permitted to take weak coffee or tea providing these beverages do not disturb the nervous system and produce insomnia.

The above remarks respecting the feeding of patients with ruptured compensation must be accepted by the reader as having a general value only. The physician must keep the invalid under more or less constant observation, during which time he must avail himself of the opportunities to vary the diet according to indications as they arise. Thus it may happen that he may have the one patient at different times on milk diet, at another, drink restriction may be practiced, or, when digestion is good, a liberal mixed diet is permitted.

The Uses and Indications of the Cardiac Tonics.

A proper understanding of the physiological action and therapeutic uses of the various cardiac and circulatory remedies is of the highest importance in the practice of medicine, not only as related to the treatment of heart diseases, but in the management of numerous conditions attended by circulatory failure. Inasmuch, however, as the subject in the professional mind is more closely associated with valvular lesions and ruptured compensation, I shall take the present opportunity for reviewing this very important subject.

Of the cardiac tonics, *Digitalis* is beyond all question the most efficient. Doubtless it has been abused, and its long-continued administration in extravagant doses has led to unpleasant effects. This fact should not lead to the neglect of the drug, but should teach us that it must be given properly. To do this, the physiological action of the drug on the circulation must be understood by the practitioner. Although acting upon the heart as a whole, its chief effect is upon the ventricles, especially the left. By its stimulating influence on the cardiac ganglia and muscular fibres, it increases the force of the heart. It likewise produces a well-marked rise in blood-pressure, due to the increased strength of the heart, and a stimulation of the vaso-constrictor nerves. Clinically, we observe a slowness of the pulse, due to stimulation of the pneumogastric centre and the peripheral ends of the vagi. The diastolic period of the cardiac cycle is lengthened; hence, the ventricles are better filled. The ventricles, which, as already stated, have been increased in force, are enabled to drive a larger quantity of blood into the general circulation with each contraction. Basing an opinion on the probability of the pneumogastric nerves having a trophic influence on the heart, we have every reason for believing that *Digitalis* must exert a favorable effect upon cardiac nutrition. Some claim, on

the other hand, that the beneficial influence of *Digitalis* on cardiac nutrition is dependent upon the expulsion of a greater quantity of blood into the coronary arteries, the circulation of said blood being still further favored by the increased ventricular contractions. With the increased nutrition of the ventricles, more efficient work is done; there is less necessity for rapidity of heart action to compensate for the weakness, and its rate become slower, and its rhythm, if disordered, more regular.

While *Digitalis* is useful in all cases of cardiac disease in which the organ is weak, as dilatation, valvular defects, and failure from various causes, it is far more frequently indicated in some than in others. Its dose must be carefully regulated according to the exigencies of the case and the idiosyncrasies of the patient. Due attention must be paid to the preparation prescribed.

As to the dose, it is always wise to begin with relatively small doses, which should be gradually increased, until the desired effect has been produced. The preparations which I have employed include the fluid extract, a fat-free tincture, and the infusion. For many years, it was my custom to employ the fluid extract made by a reliable firm, excepting when I wished to secure the diuretic effect of the drug, in which case the infusion was administered. This fluid extract was efficient, but in some cases produced gastric disturbances. In 1899 England demonstrated that this undesirable effect of the drug was dependent upon the presence of a free fat and certain narcotic principles, and this led to the manufacture by certain pharmacists of a "fat-free tincture." The claim that the latter is seldom if ever followed by any unpleasant effect on the stomach has been amply confirmed by the experience of myself and others. Several times have I given it when the stomach was sufficiently irritable to eject any but the lightest possible foods, and always with good effect. Of the fluid extract, my dosage ranged from one to three minims three times daily; of the fat-free tincture, from three to five minims. The initial dose in most cases should be one minim of the fluid extract, or three minims of the tincture. The medicinal action of the drug is slow in asserting itself, not being manifested, as a rule, until two days after the first administration. Whether in case of emergencies the action of the drug can be hastened by hypodermic administration, I cannot say, as I have never had to face such an emergency when *Digitalis* was indicated.* There are fluid preparations on the market designed for hypodermic use, *Digitalone* (hypodermic dose 8 to 15 minims) being the one I have in mind at the present writing. The so-called active principles of *Digitalis* should seldom be used. They are certainly not good substitutes for preparations made from the plant. Their only excuse for existence is their possible utility for hypodermic administration.

* Since the above was written I have had three occasions in which the use of *Digitalis* was necessary. *Digitalone* was used with very happy results.

The unpleasant effects of *Digitalis* include the disturbance of the stomach, to which reference has already been made, and its so-called cumulative action, and occasionally, an idiosyncrasy of the patient, making mental symptoms prominent. The possibility of a cumulative action has been denied by some authorities. It certainly must be rare in the practice of those who prescribe the drug with discretion. It is, of course, conceivable that careless nursing or self-dosing must produce dangerous symptoms at times. So far as I can understand, it has resulted from overdosing, either by giving small doses too frequently, or large quantities at the usual interval of three times daily; and from neglect to observe proper precautions. When *Digitalis* is being administered, a careful watch should be kept on urinary elimination. While the avenue by which the drug is excreted is not known, it is acknowledged that its untoward effects are more liable to occur in those instances in which *Digitalis* fails to exert a diuretic action. They have also followed the rapid removal of fluids from the serous cavities by paracentesis. The symptoms of cumulative action are those of *Digitalis* poisoning, and include weakness and irregularity of the pulse, especially manifested when the patient rises from a recumbent or lying posture, præcordial distress, vomiting, and exophthalmos. The mental disturbances are usually the result of overdosing. Occasionally, however, we meet with patients in whom even the ordinary doses are capable of exciting delusions and hallucinations. Such have been reported by Duroziez, H. O. Hall, and W. F. Baker. Our only recourse under such circumstances is to abandon the *Digitalis* and substitute *Strophanthus*, *Convallaria*, or another of the cardiac tonics.

How long should the use of Digitalis be continued? This question may be answered by the general rule which applies to the continuance of all drugs by saying: "Just as long as the patient continues to do well, and there is no evidence of overaction." Certainly, it should be administered until compensation is perfectly established, after which time the dose should be gradually decreased, until finally, it should be discontinued until again called for by the symptoms. In cases of imperfectly compensated hearts, but in which the patient is perfectly comfortable when not undergoing undue exertion, I have kept up the drug for three years, giving doses of five minims of the fluid* daily, or three times a week. In all cases in which it appears necessary to continue the drug for a prolonged period, it is a wise precaution, if the exigencies of the case demand frequent administration of full doses, to substitute some other cardiac stimulant from time to time to make sure that a *Digitalis* intoxication does not develop.

Digitalis is *contra-indicated* in all cases in which arterial tension is high, or when there is an advanced state of arterio-sclerosis. In cases of high

* Fluid is the name used in the trade for the fat-free mixture.

vascular pressure it is hardly possible that Digitalis is ever indicated, for the high tension can scarcely be preserved unless there is some considerable strength in the left ventricle. Hence, the chief indication for the administration of Digitalis is wanting. This opinion is not in accordance with that held by many clinicians, who advise that the effect of Digitalis in increasing blood-pressure be nullified by the simultaneous exhibition of a vaso-dilator, Glonoin being the one usually selected. It is correctly assumed by them that the heart is laboring under the high peripheral resistance, and they propose to increase its strength at the same time they lower blood-pressure by the Glonoin. To me it is more rational to lessen the heart's labor by the latter drug, and trust to hygiene and rest to improve the strength of the heart,

There can be no question about the inadvisability of giving Digitalis to patients who present marked arterio-sclerosis, for the increased force of the heart may produce rupture of an important vessel, and thereby serious results, *i.e.*, cerebral hemorrhage. Moreover, it is often undesirable to stimulate the heart in these cases. Myocardial weakness has been regarded as a conservative process in advanced arterial degeneration. While it is never possible *a priori* to state in which cases the administration of the drug will be followed by disastrous results, it is wise to recognize the general principle involved and withhold it unless the necessity for the use of it or other cardiac stimulants is unmistakable.

It has been urged by some—who I believe have had but a limited experience with the drug—that Digitalis favors termination by sudden death. This is a mere hypothesis that has not been proven by clinical experience. The pathological conditions themselves are such as to produce sudden death. This being the case, it is more reasonable to assume that this unfortunate result follows the disease rather than its remedy. In numerous cases of degeneration of the myocardium, it is of course probable that Digitalis may do considerable harm. Indeed, there are many practitioners who are strongly opposed to the administration of Digitalis in purely myocardial diseases, and this with justice. It is always wise to keep patients who are taking this remedy at absolute rest in bed, not perhaps so much because of the Digitalis, as because the ailment for which it is given must be sufficiently serious to demand the rest. Were it otherwise, there would be no necessity for the exhibition of the Digitalis.

Digitalis is especially useful in mitral regurgitation. In this lesion, blood escapes both by way of the mitral orifice into the auricle and by the aortic into the general circulation. It is the preponderance of escape through the former that occasions the danger. Digitalis, by increasing and prolonging diastole, serves to produce a more thorough filling of the ventricle, and by the succeeding increased systole, propels a large portion of it through the aortic orifice. Sometimes the mitral leakage is so far

advanced that the contractions increase the force of the backward flow, in which case the action of the drug is prejudicial. This can be determined only by trial of the remedy. It is in mitral regurgitation that we may give the larger doses of Digitalis with advantage.

Opinions differ as to the utility of Digitalis in mitral stenosis. The difficulty here lies in the underfilling of the left ventricle, and its contraction on a quantity of blood too small for the needs of the general system. Hare says: "By the prolongation of diastole, the blood is given sufficient time to enter and the ventricle is filled, sending out into the system a large wave of blood when it contracts.* Further than this, the stimulation of the right ventricle by the Digitalis enables this part of the heart to overcome the tendency to congestion which arises from the obstruction on the left side of the heart."

Broadbent† contends that Digitalis is not always well tolerated in mitral stenosis. "The administration of Digitalis in the early stages is seldom if ever called for; it is only when there are symptoms of right ventricle failure and when only after free purgation, and, if necessary, venesection have been employed, that it should be prescribed. Up to a certain point in such cases its influences is often most beneficial, but it sometimes fails to relieve, and even appears to aggravate the symptoms. If continued too long, in cases where it has been of signal service, unfavorable effects may supervene, marked by slowing of the pulse, a sense of præcordial oppression, and by coupled heart beats, the first of which alone reaches the wrist, the second being unaccompanied by an aortic second sound."

"Digitalis, therefore, must be employed with caution in mitral stenosis, and its effects must be carefully watched. Under no circumstances should it be prescribed unless the patient is under observation, and it should rarely be given for a long period of time."

If Digitalis is to be used in mitral stenosis, the advice of Babcock‡ to give moderate doses should prevail. Owing to the underfilling of the ventricle, it is evident that strong contraction are not necessary, so that large doses present no advantage. All authorities agree that the beneficent action of Digitalis in mitral stenosis lies in its ability to strengthen the right ventricle and left auricle. All likewise agree to its applicability to cases presenting œdema and passive congestion of the abdominal viscera, the lesion in these being combined with regurgitation.

In *aortic stenosis*, Digitalis acts by stimulating the left ventricle. It is plain that in these cases it should be used with caution, for overstimulation of a weakened myocardium may so increase the intracardiac pressure in the effort to overcome the obstruction as to result disastrously. When the aortic stenosis is combined with mitral regurgitation, Digitalis is abso-

* *Practical Therapeutics*, p. 594. † *Heart Disease*, p. 206. ‡ *Diseases of the Heart*, p. 496.

lutely useless, as the strengthened contractions of the ventricle must necessarily increase the backward flow through the auriculo-ventricular orifice.

In *aortic regurgitation* there is rarely any good reason for administering Digitalis. Some contend that it is dangerous in that it may produce sudden death. This statement may be without foundation, because this is the one valvular lesion which above all others is capable of terminating suddenly. The natural course of an aortic regurgitation is to produce a high degree of hypertrophy of the left ventricle. Compensation is thus readily established, and in many cases, is favored by exercise. When compensation fails, it is usually by reason of well-advanced myocardial degeneration, and Digitalis can accomplish but little. Hare further objects to its use because it so prolongs the ventricular diastole as to give more time for the blood to flow backward into the dilating ventricle. Notwithstanding these theoretical objections, Digitalis sometimes acts favorably in aortic regurgitation.

The action of Digitalis in cases of ruptured compensation presenting extensive visceral congestion is impeded, if not actually prevented altogether by the venous turgescence. Under such circumstances, we must resort to one of two devices. We may deplete the venous system by bloodletting, or we may follow the course which I occasionally find necessary, of producing the same depletion by free purgation. The best method for securing the latter effect is to administer a tablespoonful of a saturated solution of magnesium sulphate every hour until free watery evacuations take place. Then we may begin with the Digitalis.

When it is desired to obtain the diuretic effects of Digitalis the preferable preparation is the infusion, which should always be prepared fresh from the English leaves and never from the fluid extract. The great objection to the infusion is the frequency with which it disorders the stomach, causing vomiting, or increasing that symptom when already present. We need not feel obliged to resort to the infusion, however, when one of the other preparations is doing good work, for we can secure diuretic action from them through their influence on blood-pressure and increased force of the heart beats.

Strophanthus, next to Digitalis, enjoys the greatest reputation in the treatment of broken compensation. Its physiological addition is such as to make it indicated in a very different class of cases from those calling for Digitalis. The too common practice of combining it in prescriptions with the latter drug is, as will be seen, irrational in theory, and I have no doubt useless in practice. Either one or the other, or neither of these remedies is indicated in a given case. That both shall be indicated is absurd. My readers will recall that Digitalis was extolled as the best cardiac tonic, excepting in cases in which it is undesirable to bring an increase in the intravascular pressure.

The action of *Strophanthus* is to stimulate the heart muscle without exerting a similar influence on the vaso-motor system. Hence, any rise of vascular pressure produced by it is due to the increased strength of the heart, which is not forced to increased labor by an associated vaso-contraction. It is therefore preferable to *Digitalis* in all cases in which the stimulating effect on the heart alone is required. Thus it has become the favorite remedy of many physicians in cases of cardiac failure associated with atheroma. Still, I would not make the latter indication too sweeping, for I have several times had most excellent—I might say brilliant results—from the use of *Digitalis* in the aged, when the circulatory pressure was at or below the normal point. Some physicians advocate the combination of *Digitalis* with *Glonoin* in cases of atheroma with high blood-pressure, assuming that the vaso-dilator action of the latter drug counteracts the vaso-constrictor effect of the former. Unfortunately for the rationale of this widely-used prescription, *Digitalis* is a drug of slow and persistent action, while the effects of *Glonoin* are quick and evanescent. It is hard to understand, therefore, how the undesirable effects of the one can be controlled by the simultaneous administration of the other. Undoubtedly, some good results are generally observed; otherwise the formula would not be so popular. But better effects should be obtained from the administration of *Strophanthus* alone.

If it is desirable to give *Digitalis*, and the increased vascular pressure is to be avoided, the best plan is to administer at the same time *Potassium iodide* in doses of five to ten grains, three times daily. This latter drug produces a permanent lowering of the blood-pressure, and at the same time is distinctly curative in the pathological conditions which give rise to the same.

Like *Digitalis*, *Strophanthus* does not act as favorably as we would like when the myocardium is degenerated. It also has a diuretic action, and hence is of use in the treatment of cardiac dropsies when there is no associated nephritis. It is one of the remedies of use in cardiac weakness attendant upon shock or syncope, in which cases it may be administered hypodermically in order to secure quick action. Its hypodermic use is, however, open to criticism, as the drug is highly irritating to the tissues; still, in view of the seriousness of the situation, subsequent inflammatory induration or abscesses will count for nothing should a life be saved.

The above-described limitations of the use of *Strophanthus* will not be conceded by all therapeutists, for there are some who advocate it most strongly in renal disease, even though uræmia is impending. Still others have gone so far as to recommend it for its diuretic action in the treatment of renal calculus.

Hare,* speaking of the comparative effects of *Strophanthus* and *Digi-*

* *Practical Therapeutics*, p. 379.

talis, says: "From the cases of cardiac disease seen frequently by the writer, he has reached the conclusion that Digitalis gives relief to patients under the age of twelve years in a much smaller proportion of cases than it does in adults, and that though the stomach is no more frequently disordered, increased dyspnœa, nervous irritability and cyanosis often follow its use."

Wadleigh,* on the other hand, claims that among the aged, Strophanthus gives much better results than any other drug of its class. He is very enthusiastic in his praises of it in the various symptoms dependent upon the circulatory changes of arterio-sclerosis, as vertigo. "In the so-called irritable heart, characterized by palpitation on slight exertion, more or less pain in the region of the heart, often quite severe, and a weak, quick pulse, sometimes intermitting, but with no organic disease of the heart present, we may give the drug with almost an absolute certainty of benefit from its use."

The only preparation of the drug I have used is the tincture, of which the dose may be from one to five minims three times daily. Care should be observed in giving Strophanthus, because poisoning symptoms may be developed from it rather quickly in some cases. No such instance has, however, occurred in my experience.

Of the remaining cardiac stimulants to be considered, it is commonly stated in the text-books that they are to be used when Digitalis fails. Such general statements has led some practitioners to avoid the administration of Digitalis almost exclusively, and rely upon drugs far its inferior. "When Digitalis fails" means just what the words imply. Because a drug happens to succeed when Digitalis fails, does not prove that it is a better drug for general use, but only that it is the better drug for that particular case. Too much reliance must not be placed upon the enthusiastic advocacy of these drugs by various clinicians. When Digitalis is indicated, it should be given. If it fails, despite the apparent propriety of its administration, then we may fall back upon one of the following drugs:

Convallaria has a physiological action which closely resembles that of Digitalis, but it is far less likely to exert any unpleasant effects on the stomach. Its action, however, is limited strictly to the heart, and its influence in slowing the pulse is not so well marked. Although highly recommended in cardiac dropsy, its diuretic action is not as great as that of Digitalis. Clinically, it has been found to be especially efficient in the treatment of disturbances in the cardiac rhythm, providing such are not the result of myocardial degeneration. In valvular diseases, its general sphere of utility corresponds closely with that of Digitalis. It is especially useful in mitral disease, overcoming the passive visceral congestions of these lesions. West-

* *Medical News*, March 14, 1896.

brook* recommends *Convallaria* as a circulatory stimulant in cases of chronic phthisis and other exhausting diseases.

The most commonly used preparation of *Convallaria* is the fluid extract, the dose of which ranges from 5 to 15 minims, three to four times daily.

Adonis vernalis increases the force of the heart and raises the arterial pressure. Its action is, therefore, identical with that of *Digitalis*. Its effects are observed more quickly than those of the latter remedy. It is generally regarded as an efficient substitute for *Digitalis* when dropsy is present. It is also regarded with favor in aortic regurgitation with ruptured compensation. The dose of the tincture is one-half to one fluid drachm. For prolonged administration, its glucoside, *Adonidin*, is recommended in doses of from one-eighth to one-quarter of a grain three times daily.

Sparteine came into professional favor very largely through the influence of Germain See and Goodno.† The former recommended it particularly in mitral regurgitation and stenosis and aortic regurgitation. It is especially indicated when prompt action is required. It has a strong diuretic action, and is useful in cases of cardiac dropsy. Its special indication in aortic regurgitation is found in rapidly beating tumultuous heart. Goodno, while expressing himself as well satisfied with its action in selected cases, admits that it often fails. He says: "It is generally sufficient if given in grain doses of the first decimal trituration. Doses as large as a quarter of a grain may be repeated every few hours. In several cases marked by cardiac weakness and disturbance of rhythm, but without murmurs or evidences of mural disease, its beneficial action was conspicuous. The presence of a nervous or hysterical element suggests *Sparteine*." That it should be efficient in cases presenting a strong neurotic element is evident when one considers the physiological action of the drug. Doubtless, this accounts for its beneficial effects in exophthalmic goitre and functional cardiac disturbances.

Cottam‡ speaks in the highest praise of it as a cardiac stimulant preceding anæsthesia in cases which are likely to be subjected to prolonged surgical operation. His practice is to give $\frac{1}{10}$ of a grain ten minutes prior to the beginning of anæsthesia, and if the operation is prolonged, an additional dose of $\frac{1}{15}$ of a grain.

The dose of *Sparteine* is rather elastic. Most of its advocates recommend from one-fourth to one-half of a grain. Still, it may be given in as large quantities as two grains at a dose. The larger doses should not be given until it has been found that the smaller ones have failed.

It does not seem to have been very successfully used in the extreme cases of broken compensation in which *Digitalis* has been found so efficient.

Strychnia is the one cardiac stimulant which has been universally

* Foster's *Practical Therapeutics*, vol. i, p. 300.

† *Practice of Medicine*, vol. ii, p. 95.

‡ *Therapeutic Gazette*, November, 1896.

abused. One cannot speak too strongly of the too prevalent practice of giving it in every acute and chronic condition in which cardiac weakness may develop or may already be present. Were the practice harmless, it might be passed by as an innocent system of faith cure, satisfying the mind of the practitioner, even though it did the patient no good. But when the physiological action of the drug is considered, it is easy to see that this indiscriminate practice is capable of doing considerable harm, if, indeed, it has not been the means of losing many lives.

In valvular and myocardial diseases, it is probably worthless in comparison with the numerous cardiac stimulants at our disposal. Nevertheless, it is not wanting for adherents in this particular field. Babcock* does not hesitate to recommend it as a remedy in about every lesion to which the heart is liable. Still, he does not depend upon it alone, but administers it as an "accessory" to other "cardiac energizers." The doses he recommends must impress others as bordering the heroic, for he does not hesitate to recommend $\frac{1}{30}$ of a grain "administered every four, or in extreme cases, every two hours." He has not hesitated to give it every hour in face of great peril. In this extravagant dosage, he seems to stand alone. Reason seems to oppose his position, for such doses must produce an irritability of the nervous system, and with it quick or short cardiac contractions—the very effect we do not desire. It is not in organic heart diseases that it is so extensively abused and misused, but rather by physicians in the treatment of acute exhausting diseases, and by surgeons as a post-operative "pick-me-up." In the former condition it is certainly harmful, for it cannot be given continuously without producing a most undesirable irritability of the nervous system. In post-operative conditions it is rarely indicated. The usual condition observed at that time is one of lowered vascular pressure, for which Atropia, in combination with Strychnia, saline infusion, high colon injections, and Suprarenal extract are indicated. In the vast majority of such cases the hot saline solutions alone are sufficient. Cardiac failure coming on during anæsthesia may be treated by Strychnia, but the dose should be large, *i.e.*, $\frac{1}{10}$ of a grain, which, in case of extreme danger, may be repeated in ten minutes, *but not again in any dose.*

Agaricine was proposed as a cardiac stimulant by Goodno. He remarks: "Considerable experience has now been accumulated, sufficient, indeed, to place this remedy in the front rank of medicines of this class. Its range is more limited than that of *Digitalis*. In two or three cases of extreme dilatation of the heart, secondary to mitral disease or emphysema of the lungs, *Digitalis* and other well-known stimulants having failed, and a fatal result appearing imminent, two or three grain doses of the first decimal trituration of *Agaricine*, repeated every two or three hours, gave not

* *Diseases of the Heart*, p. 499.

only temporary relief, but in two instances protracted the patients' lives and conferred much comfort. As a remedy in cardioplegia, it can hardly be excelled, not even by Strychnia. The indication which first led to the use of Agaricine was troublesome co-existent sweating."

Caffeine occupies a unique position in that it is a cardiac stimulant and a renal and cardiac diuretic. This statement would seem to make it a superior remedy to *Digitalis* in the general run of cases. It acts solely through the nervous system, and has a considerable influence in raising blood-pressure. Practically, its administration is not justified, excepting in cases in which the stimulants already mentioned have failed, because of its liability to produce insomnia in certain individuals. Nevertheless, it may be regarded as an invaluable remedy in broken compensation with anasarca, with or without renal disease. The dosage ranges from one-half to two grains four times daily.

The last of the heart stimulants to be mentioned is *Morphia*. The placing of this drug in this category will probably be surprising to many of my readers. Whether it is a true stimulant, or whether it energizes the heart by its quieting effect on the nervous system, I will not pretend to say. The fear that it will have a depressing effect when dyspnoea is extreme, and the heart action is weak and labored, is utterly groundless. There may be some reason for objecting to its use in the cardiac failure of the terminal stages of interstitial nephritis; certainly, none in cases in which the heart lesion is uncomplicated or has produced passive congestion of the kidneys. The usual dose is one-eighth of a grain hypodermically given once or twice daily. Some cases may require as much as one-fourth of a grain. If there is reason to fear that the drug will have a deleterious effect on urinary secretion, we may counteract that by the administration of Theobromine, Agurin, or other diuretic remedies.

A number of minor cardiac stimulants have been mentioned in literature. *Casca cortex*, in the tincture, is recommended by Brunton for dilated heart without coincident valvular disease; also in mitral disease and dropsy. Its indications are a rapid, low tension pulse with venous congestion. The dose is five to ten minims.

Cratægus oxyacantha was used for a long time by botanic physicians, who recommended it in angina pectoris, præcordial oppression and valvular insufficiency. Of late years, it has been much used by physicians of our school. No definite indications have been named for it. Blackwood simply rests satisfied with recommending it in cardiac dilatation, weak heart, and dropsy. His dose is five drops of the tincture.

Coronilla has been recommended in organic affections of the heart for the same class of cases for which *Digitalis* is ordinarily employed. It is efficient in relieving dyspnoea and reducing dropsy and benefiting tachycardia. It is especially recommended in mitral and aortic diseases. The dose is one-half to one fluid drachm of the tincture.

Kola is recommended for cardiac weakness occurring in conjunction with or succeeding febrile and exhausting diseases, as influenza and phthisis. The dose is twenty minims of the tincture, three times daily.

Capsicum is extremely useful in the cardiac weakness attendant upon delirium tremens. It also aids in promoting sleep in that disease. The dose is five to fifteen minims of the tincture, which may be administered in beef tea.

It now remains to speak of certain drugs which are necessary when a quick, though short-lived action is required. They are generally classed as "*Analeptics*." In this class belong Ether, Camphor, Ammonia and the Alcoholics. The indication for these remedies is summed up in the one word, "Collapse." *Ether* may be given by the mouth, hypodermically, or by inhalation. For oral administration, the best preparation is Hoffman's anodyne (*Spiritus ætheris compositus*), the dose of which is one-half to two fluid drachms always diluted with cold water. It is the best remedy for the immediate relief of anginal and other cardiac disturbances associated with gaseous distention of the stomach. Hypodermically, it may be given in doses of 30 minims.

Camphor is used almost exclusively in the form of camphorated oil, one part of Camphor to 10 parts of olive oil, of which the dose is 30 minims. This preparation may be repeated at short intervals as indicated by the condition of the pulse. It is objectionable, however, because of the subsequent local inflammation and induration at the sites of the hypodermic needle punctures.

Ammonia, in the form of *Aromatic Spirits of Ammonia* is probably the best quick stimulant for domestic use. It is indicated for syncope generally. The dose is one-half to one fluid drachm, well diluted in water, by the mouth.

Vascular Remedies.—Besides the remedies above mentioned, there is a large class of drugs which act entirely upon the vaso-motor nerves and produce changes in vascular pressure in consequence of such action. They are mistakenly used by many physicians as cardiac stimulants—a property which they are all far from possessing. Those, the use of which is especially abused, are the vaso-dilators, as follows: *Amyl nitrite*, *Glonoïn*, *Erythrol tetranitrite*, and *Sodium nitrite*. The sole indication for these drugs is high vascular pressure. If a heart is laboring under high peripheral resistance any one of them may be indicated. The selection of the particular drug depends not so much upon the symptoms as upon the necessity for prompt or immediate action and the maintenance of the reduced blood-pressure thus brought about. Nitrite of Amyl is the most quickly-acting of the vaso-dilators; and its effects wear off sooner than any of the others. It is administered almost entirely by inhalation. A perle, containing two or three drops, is broken in a handkerchief and the vapor of the drug inhaled.

Glonoin or *Nitroglycerin* is administered almost exclusively in the second decimal dilution or 1 per cent. solution. The proper initial dose is one minim three or four times daily. In many instances it produces quite a severe headache, which soon wears off. The reduction in vascular pressure is very prompt, though it does not take place as quickly as with *Amyl nitrite*. Its therapeutic effect continues three or four hours, when it may be repeated, if the symptom still calls for it. Some physicians prescribe *Glonoin* in combination with *Digitalis* in order to avoid the increased blood-pressure of the latter drug. As I have already stated, such a combination does not seem to be practical. The therapeutic effect of *Digitalis* is not secured for two or three days and then is maintained. That of *Glonoin* appears within an hour, and passes off in a comparatively short time.

Patients who have been taking *Glonoin* for any length of time become tolerant of the drug, so that larger and larger doses are required to secure its medicinal action. Extreme cases have been reported in which as much as one drachm of the 1 per cent. solution was required to produce the pathogenetic effects of the drug.

Erythrol tetranitrite is prepared in tablets containing one-half grain each. Its action is similar to that of *Glonoin*, but is maintained for a longer period of time. It is, therefore, superior to that remedy in chronic conditions, where its action must be maintained for a considerable time.

Potassium nitrite, *Sodium nitrite*, and *Cobalto-potassium nitrite*, are drugs which have been used for the production and maintenance of a lowered vascular pressure, as in case of angina pectoris, interstitial nephritis, etc. The dose of the sodium and potassium salts is from one to three grains; of the Cobalto-potassium nitrite, one-half grain three or four times daily. The latter, though very efficient, is seldom used.

Heart Remedies.

Arsenicum album.—The usual statements as to the sphere of utility of Arsenic in heart diseases would suggest that it is applicable mainly to the advanced stages of diseases of that organ. Such a fallacy cannot be too strongly criticized, for while the symptoms of the drug are those of the terminal stages of ruptured compensation, Arsenic is invaluable as a means of improving the nutrition of the heart muscle, even in the earliest days of myocardial insufficiency. The laying of too much stress on its symptoms leads to the neglect of the earlier and therefore more readily curable phase of cardiac pathology. No remedy is more useful than it in fatty degeneration of the heart; or is more efficient in warding off attacks during the inter-paroxysmal periods of angina pectoris.

It is the routine remedy of many physicians in all diseases of the myocardium, even those secondary to valvular defects. In this connection, quite a number of clinicians prefer the Iodide of Arsenic to the Arsenious

acid. Balfour and Ringer make strong claims for it is as the tonic of the senile heart, claiming that it will increase the strength and fulness of the pulse and reduce any swelling of the feet that may be present.

The ability of the drug to inflame the endocardium has led to its use in valvular affections generally.

The pathogenesis of Arsenicum contains all the symptoms manifested in patients with broken compensation, including restlessness, marked dyspnoea which is distinctly worse after midnight; palpitation; great irregularity of the action of the heart; great præcordial pain and anxiety; scanty urine; albuminuria; general dropsy; intense thirst with intolerance of water; tingling of the hands and fingers; exhausting diarrhoea.

Aurum muriaticum.—The pathological states in which Gold chloride may be found useful include hypertrophy of the heart, fatty degeneration of the myocardium, and atheromatous conditions of the bloodvessels, especially if any of these are associated with interstitial nephritis. The symptomatology of the drug suggests very strongly its utility in the circulatory symptoms of aortic regurgitation. The patients complain of a sensation as of a crushing weight under the sternum, as if the heart would burst through; sudden jerks or shocks about the heart; rush of blood to the head; sensation of fulness in the head; head feels sore and bruised; and flashes of light before the eyes.

Its influence over cardiovascular changes make it very useful in old people for attacks of oppression at night, associated with palpitation and great debility.

The *Bromide of Gold* was successfully used by Hale in two cases of *exophthalmic goitre*. It relieved the cerebral throbbing, the mental irritability, melancholia and the cardiac excitement. He prescribed the second decimal trituration in doses of two grains three times daily.

The *Iodide of Gold* is recommended by Hale in arterio-sclerosis "with vaso-motor constriction" in doses of three to five grains of the second decimal trituration three times daily. It should be continued for many months, using judgment in stopping the drug from time to time as conditions indicate.

Amyl nitrite.—Reference has already been made to the use of Amyl nitrite in the reduction of high vascular pressure. The drug may also be used homœopathically in certain cases of palpitation of the heart in which the most prominent symptom is annoying flashes of heat in various portions of the body, and attended by low vascular pressure. Such symptoms are especially liable to occur in women going through "the change of life." Characteristic symptoms for its administration are oppressed breathing and constriction about the heart.

Æsculus hippocastanum is indicated in functional cardiac disturbances, when such occur in association with hæmorrhoids, especially if there is pain in the præcordial region.

Benzoic acid.—This drug may be occasionally useful in *sclerosing endocarditis* associated with nodular deposits in various joints. Its special indication is the offensive odor of the urine. The disturbances in cardiac function include violent paroxysms of palpitation, coming on after midnight, and intermitting of the heart-beats.

Badiaga has been recommended for paroxysms of *palpitation* which are brought on from pleasant excitement.

Bovista.—The therapeutic sphere of *Bovista* seems to be limited to functional cardiac disturbances and sluggishness of the venous circulation. The patient complains of a sensation as if the heart was too large, associated with oppression in the chest; palpitation after meals and during menstruation. The same sensation may exist in the head, the patient complaining of deep headache, as if the head was too large. This drug does not seem to be in very general use, which would suggest that it is not very reliable.

Cactus grandiflorus.—Cactus is certainly both much used and misused owing to the predominance in the mind of physicians of its characteristic symptom, "a sensation as if the heart were squeezed by an iron band." While it is pre-eminently the remedy in the majority of cases presenting this symptom, there are other medicines useful under like conditions. Besides this, Cactus may be successfully prescribed in a great variety of heart affections. To quote Hughes :* "It seems beneficial in all overactions of this organ from nervous palpitation to acute carditis. In the distress arising from hypertrophy; in the severe sufferings incident to valvular disease (perhaps also in angina pectoris); and in chronic palpitation, it generally gives rapid and lasting relief. The feeling as if the heart were grasped and compressed as with an iron band (probably spasm) is very characteristic of Cactus in these cases, and is well marked in its pathogenesis. It would probably be beneficial at least to relieve pain in internal aneurysms."

While the praise of Hughes is by no means overdrawn, his enthusiasm should not lead physicians to the administration of Cactus as a substitute for *Digitalis* as a cardiac tonic. When its characteristic symptoms are present, it may be given in conjunction with that remedy, experience teaching that each drug reinforces the other in its therapeutic action.

Hale† sums up the therapeutic range of the drug very aptly when he speaks of it as applicable to conditions of hyperæsthesia, irritability, neuralgia, spasm, irregular action, and finally inflammation. It may be used for hæmoptysis when that symptom arises from an excited action of the heart; if there is an associated weakness of the pulse it is not indicated.

It is used successfully by both schools of medicine in angina pectoris, the special symptoms indicating it in this disease being the sensation of

* *Pharmacodynamics*, p. 337.

† *New Remedies. Therapeutics*, p. 93.

constriction, to which reference has already been made, and numbness and tingling of the left arm.

Among the functional cardiac disturbances, Cactus is especially to be commended in palpitation, being indicated when that symptom arises from fright or other emotions; the patient awakes at night in fright; palpitation, which is aggravated by beginning motion, but yet is not induced by physical activity.

In myocardial affections it is indicated by œdema of the face, with a cyanotic hue, general dropsy, dull pain in the præcordia, and intermittent pulse.

In valvular lesions it is often an efficient palliative. It has a distinctive symptom, œdema of the left arm only. It is also capable of relieving many of the morbid sensations about the heart occurring during the progress of ruptured compensation. Wilcox regards it as the remedy *par excellence* in aortic regurgitation, while in mitral disease he expresses the opinion that it is almost useless.

It is a leading remedy for idiopathic hypertrophy of the heart in young people.

When given in crude form, the dose of Cactus is two to eight drops of the tincture.

Helleborus is indicated in disturbance of the cardiac function in connection with cerebral affections. The pulse is slow and the temperature is subnormal. It has been recommended by Phillips * in cardiac dropsy in doses of 5 to 15 minims of the tincture every two to three hours.

Baryta and its salts, the *Carbonate* and *Muriate*, are undeservedly neglected in cardiac therapeutics. They are particularly useful in the cardiac affections of the aged; indeed, they have been recommended in all varieties of failure of the cardiac muscles. Special symptoms include dull stitches under the sternum deep in the chest, followed by bruised pain in that spot. It may also be administered successfully for palpitation in chlorotic and hysterical girls.

In degenerative myocardial affections the Muriate may be given in solution of five grains to the ounce, one teaspoonful of the solution three times daily.

It is important to note that Bardet † has issued a warning as to the use of Barium chloride in material doses, and it occasions coagulation of the blood, and death results mechanically from embolism. "Death has occurred in consequence of 0.17 grm. (or gr. ijss), the quantity not having been taken in one dose, but in daily portions of 0.015 grm. (or gr. $\frac{1}{4}$). The symptoms of intoxications manifest themselves at the end of a week. This, however, must be regarded as an unusual case." The author regards

* *Materia Medica and Therapeutics*, p. 15.

† Shoemaker's *Materia Medica and Therapeutics*, p. 247.

$\frac{1}{10}$ grain the usual dose, given in solution. He also quotes DaCosta, who used Barium chloride as a cardiac tonic in valvular insufficiency with irregularity of the heart. It "relieves pain and the sensation of uneasiness, acting as a fairly good diuretic, and capable of being given for a considerable time without disturbing digestion."

Gelsemium.—This remedy is useful in cardiac neuroses. It is one of the remedies for cardiac paralysis attendant upon or succeeding the infectious diseases. A very prominent symptom is a sensation as if the heart would stop beating, if he did not move about. In other words, we have the anomalous condition of motion stimulating the heart to activity. Other symptoms include tremor of the entire body, with desire to be held still; patient is roused suddenly from sleep with the feeling that the heart is about to stop beating. Hysterical palpitation.

Grindelia is indicated in cardiac affections in association with pulmonary affections. Heart and respiration alike are weak. The patient wakes up suddenly with a sensation as if respiration had ceased. It has proven beneficial in the shortness of breath attendant upon valvular disease, and in chronic bronchitis and bronchorrhœa. In the latter affections, it is to be administered in doses of from 10 minims to one fluid drachm of the fluid extract.

Colchicum is useful mainly in acute cardiac affections, especially pericarditis and endocarditis following rheumatism. Its special symptoms include violent cutting pains in the chest with great oppression and dyspnoea; a sensation as if the chest were being squeezed by a tight bandage; vertigo, palpitation and even syncope from assuming the upright posture.

Conium is useful for the weak heart of the aged, when the case is characterized by variations in blood-pressure and rhythm of the pulse. The patient may complain of sudden jerks or shocks about the heart.

Aconitum napellus.—Aconite is useful in a wide range of cardiac diseases, being indicated mainly by a high degree of mental anxiety (which is regarded by many as an essential symptom to its administration), sensations of numbness and tingling, extending from the region of the heart into the left arm and hand, præcordial pain and stitches extending into the left arm, cardiac oppression, even to the extent of syncope, and palpitation.

Its utility is especially marked in the nervous affections of the heart. It is one of our leading remedies in *palpitation*, especially that occurring in young and growing subjects, and in plethoric individuals with excitable temperaments. The origin of the seizures is some emotional cause, as fright, or from excessive exertion, is an additional indication.

It is not to be regarded as a frequently indicated remedy in true *angina pectoris*. In the false variety, the etiological factors and the symptoms make it useful in a large proportion of the cases.

It is an important remedy in uncomplicated *hypertrophy of the heart*;

but should practically never be given for that lesion when a compensatory condition in valvular disease.

It is very frequently of value in *aortic regurgitation* to quiet the intense throbbing and congestions which attend that lesion.

It is one of our important remedies in all acute inflammatory affections of the heart. Its use in pericarditis and endocarditis has been mentioned. It may be prescribed in *acute myocarditis* with impending cardiac failure.

It is indicated in *tachycardia* for the relief of the paroxysm when symptoms above mentioned are present, and when the pulse is small or feeble.

Aconite is the leading remedy for *hæmoptysis* attendant upon all cardiac lesions.

Scutellaria is occasionally useful in purely nervous disturbances of the heart, especially in palpitation from general mental excitement. It has been used successfully in tremulous and other strange sensations about the heart, and in cardiac neuroses reflex from utero-ovarian disease. *Valerian* and *Camphor monobromate* are also useful in palpitation from mental excitement and hysteria.

Cocaine hydrochlorate is highly commended by Goodno * in the cardiac failure attendant upon the acute infectious diseases ; also for the hiccoughing which attends the later stages of heart lesions. Two grains of the first decimal trituration are advised every two to six hours.

Moschus is a most important remedy in the palpitation of hysterical subjects, being especially useful to relieve acute attacks. The patient complains of a sensation of tightness relieved by taking a deep inspiration. It may also be prescribed for the palpitation from excessive use of tobacco.

Hydrocyanic acid is useful for the dry, tickling cough which sometimes accompanies heart affection ; also for the nervous cough of irritable heart and asthma. It is one of the important remedies for dyspeptic palpitation. Elliotson, quoted by Hughes, says of this drug : " It is good for those disorders of the stomach which in some of their symptoms resemble affections of the heart."

Iodine is of limited application in heart affections, as other remedies having similar symptomatology give better results. Still, it may prove useful in hypertrophy of the heart ; the patient complains of a sensation as if the heart were being squeezed by a firm hand ; excessive weakness in the chest with gone feeling ; purring feeling over the heart. Pathologically, it should be an excellent remedy for the pericarditis accompanying croupous pneumonia. Among the functional affections, it may be prescribed for the palpitation of melancholia or other depressing conditions of the nervous system.

Kali carb., though very frequently prescribed in heart affections, is a drug which is infrequently indicated. Its main utility is found in the acute

* *Practice of Medicine*, vol. ii, p. 31.

inflammations of the heart, as pericarditis and endocarditis. Even then it is a remedy for the later stages. The pulse is weak and intermittent or irregular; and the patient complains of sharp, stitching pains in the chest.

Actea racemosa.—The underlying general conditions in the cases of cardiac disease calling for *Actea racemosa* are rheumatism and the neurotic state. In peri- and endocarditis of rheumatic origin, better results are obtained from the remedies mentioned when speaking of the treatment of those diseases. It oftentimes proves useful in chronic rheumatic subjects with valvular disease when *arrhythmia* is a prominent feature.

Among the cardiac neuroses, it often proves useful in *palpitation*, *pure nervous arrhythmia*, and *præcordial pain*, especially when attended by rheumatic pains or a sensation as if the left arm and hand were bandaged tightly to the body. It is pre-eminently a remedy for all cardiac neuroses occurring about the climacteric period.

It is unquestionably the best remedy for the cardiac complications of *chorea*. It was highly recommended by Hale* for a symptomatic syndrome, which he chose to call *chorea of the heart*, and "characterized by tumultuous, irregular, unexpected and strange motions of the heart, aggravated by emotions and subsiding during sleep."

One meets in practice with a large class of patients, practically all of them being women, who may be described as possessed of a nervous atony, and who suffer from palpitation with intermitting weak pulse. Here *Actea racemosa* may be prescribed successfully, although *Digitalis* is often indicated in the same condition.

Actea racemosa has been used for many years by eclectic physicians for *cardiac hypertrophy*, especially when associated with sore or bruised feeling, and occurring in rheumatic subjects.

Hare refers to its use in fatty and irritable heart when *Digitalis* fails.

Ammonium carbonicum.—This remedy, though a valuable one, has a very restricted sphere of utility. It is indicated in cases of *dilatation of the heart* secondary to chronic bronchitis, asthma, and emphysema. The patient may complain of a sensation as of a crushing weight on the sternum. His symptoms are almost invariably worse in the warm room. Cyanosis is prominent. Palpitation and dyspnoea are excited by slight exertion. The cough is frequently followed by the expectoration of bloody mucus. *Ammonium carbonicum* may be given either in potency or in crude form. If the latter, the dose should be from 10 to 15 grains every three or four hours.

Anacardium orientale.—So far as heart affections are concerned, *Anacardium* is useful only in cases of palpitation, especially those occurring in the aged. Special indicating symptoms are defective memory, pulsation of

* *New Remedies. Therapeutics*, p. 181.

the entire body after slight exertion, and oppression of the chest associated with weeping, which gives relief.

Apis mellifica.—The distinguishing features of *Apis mellifica* in heart affections are the dropsy, and the character of the pains. The drug is indicated even though the dropsy be well advanced, and there are hydrothorax, hydropericardium, and ascites. The mucous membranes likewise participate in the oedema. Pains, when present, are of a stinging or bruised character. The urine is scanty, thirst is absent, and prostration is great. It is to be considered as one of the possible remedies in the heart failure attending or succeeding diphtheria. Much stress has been laid by Dewey* on "he does not see how he can get another breath," as an indicating symptom.

Apocynum cannabinum.—This is one of the leading remedies when anasarca is present. Though more efficient in cases in which the only lesion of the kidneys is a passive congestion, it is often successful in the presence of organic kidney diseases occurring in association with valvular lesions. It is indicated by a sinking sensation in the epigastrium and small, weak, irregular pulse. Care must be exercised in securing a good preparation of *Apocynum*, as some tinctures and fluid extracts are much better than others. Three to five drop doses of the tincture must be used to get results. One must be careful in using *Apocynum*, because of the danger of causing nausea and vomiting from overdoses.

Arnica montana.—The indications for the use of *Arnica* are found in the causative factor—overwork—and defect in the venous circulation. It is indicated in simple cardiac hypertrophy, due to the above-mentioned cause, and when there are associated a sore, bruised feeling over the entire chest, a sensation as if the heart were grasped by a band, and swelling of the hands with sense of fulness when the arms are permitted to hang down. It has also been recommended for fatty infiltration of the heart.

Phosphorus is useful in myocardial diseases, but especially in fatty degeneration. The symptoms, in a general way, are those due to weakness of the right heart; in other words, the symptoms of venous stagnation. It is oftentimes useful in functional cardiac disturbances, especially in palpitation occurring in young subjects possessed of the characteristic *Phosphorus* build; the palpitation is brought on by any unexpected emotional influence, and from exertion. Though not one of the commonly accepted remedies in endocarditis, it may be useful in that disease when complicating pneumonia, or associated with myocarditis. It is an important remedy for the impaired hearts of the prematurely aged.

Nux vomica.—The cardiac cases suited to *Nux vomica* are nearly always brought about by gastric and hepatic disturbances or neurotic causes. It is the principal remedy for palpitation due to sedentary habits,

* *Homœopathic Therapeutics*, p. 56.

overstudy, indulgence in alcohol, and excessive indulgence in highly seasoned food. In dilatation of the heart it is useful when associated with nausea and heaviness of the chest.

For **functional nervous troubles with anæmia**: *Ferrum*, *Cuprum*, *Cinchona*, *Helonias*, *Nux vomica*, *Calcarea carb.*, and the *Hypophosphites*.

Hysterical cardiac disturbances: *Ambra grisea*, *Asafœtida*, *Camphor*, *Crocus*, *Ignatia*, *Sumbul*, *Valerian*, and *Scutellaria*.

Sensation of tremor about the heart: *Kalmia*, *Lilium tigrinum*, *Spigelia*, *Camphor*, *Sumbul*, *Digitalis*, and *Sodium bromide*.

For **cardiac neuroses of gastric origin**: *Nux vomica*, *Bismuth*, *Lycopodium*, *Hydrastis*, *Euonymin*, *Iris*, *Pulsatilla*, *Podophyllum*, and *Nitro-muriatic acid*. When associated with flatulence: *Creosote*, *Oleum cajeputi*, *Terebinthina*, and *Naphthaline*.

For **bad effects of tobacco**: *Ignatia*, *Convallaria*, *Hydrocyanic acid*, *Cactus* and *Veratrum viride*.

For the **senile heart**: *Digitalis*, *Nux vomica*, *Arsenicum album*, *Arsenicum iod.*, *Strophanthus*, *Ferrum*, *Colchicum*, and *Lycopodium*.

For **acute myocarditis**: *Arsenicum*, *Muriatic acid*, *Phosphorus*, *Lachesis*, *Arsenicum iod.*, and *Aromatic Spirits of Ammonia* (as a cardiac stimulant).

For **chronic myocarditis**: *Mercurius biniodid.*, *Kali hydriodicum*, *Aurum muriaticum*, *Arsenicum iod.*

For **fatty heart**: *Arsenicum*, *Kalmia*, *Iodine*, *Phosphorus*, *Digitalis*, and *Aurum muriaticum*.

For **anæmia attendant upon various cardiac disturbances**: *Iron* and its various preparations; but especially the *Arsenate of Iron*.

For **hypertrophy of the heart**: *Aconite*, *Cactus*, *Lilium tigrinum*, *Belladonna* (in young subjects), *Glonoïn* (if *Belladonna* does not relieve), *Naja*, *Arnica*, *Rhus tox.*, *Bromine*, *Aurum mur.*, *Kalmia*, *Lachesis*, *Nux vomica*, *Spigelia*, *Coca*, *Veratrum viride*, and *Digitalis*.

For **cardiac neuroses from utero-ovarian irritation**: The *Bromides*, especially if the case presents erotomania, profuse menstruation, insomnia, and general nervous erethism.

For **cardiac neuroses in gouty or rheumatic subjects**: *Lithium carb.*, and *Lilium tigrinum*.

Chronic Myocarditis.

For therapeutic purposes, the term chronic myocarditis can be used in a general sense to cover all cases in which the heart muscle is degenerated, and thereby rendered incompetent. In a general way, the hygienic measures recommended in the pages devoted to the treatment of valvular insufficiencies, apply to the treatment of patients with myocardial degenerations.

Prophylaxis is only possible in those comparatively few instances in which the patients consult the physician for some complaint other than that of the heart, when physical examination accidentally discovers the weakness of the myocardium. In these instances, we should make it our duty to advise the patient as to habits of eating, and rest and exercise. As to the question of diet, we must first determine the needs of our patient. If he is over-weight, or if our inquiry discloses he partakes too freely of food and drink, restriction in table pleasures is imperative. If, on the other hand, he is under-weight, and his diet is too scant or is poorly selected, we must force nutrition. It should be remembered that the myocardium suffers severely in all patients who are illy-fed. When it is diseased, repair cannot be expected without adequate nutrition. Alcoholic beverages are useless as remedies; in fact, they are damaging in nearly all. Their use is to be countenanced only in those persons who have been addicted to them for years, and in whom their withdrawal must necessarily do more harm than good.

The regulation of rest and exercise must be decided in accordance with the previous habits of the individual. In nearly all cases, the fault is found to be a sedentary existence; hence, it is our duty to advise patients to exercise in the open air. The majority if not all of them being past the age of 50 years, it is evident that such exercise must be of a mild character. Certainly, it should never be carried to the extent of producing shortness of breath or prolonged tachycardia. It is a good working rule to confine the exercises to gentle walking, horseback riding, bicycling *on the level*, golf, and driving, until such time as improved methods of living have strengthened the myocardium. Then we may advise more strenuous physical activity; but we should always enforce upon the patient that any exertion which causes breathlessness or a quickening of the pulse which does not subside entirely within half-an-hour is too much for him. No matter how well the patient may bear his exercise, *he should always desist before it is carried to the point of fatigue*. When circumstances will permit, he should make it a rule to rest quietly for thirty minutes to an hour after the exercising is over. When his condition is such as to indicate that cardiac function will ere long be disturbed, it is wise to take that rest in a recumbent posture. Under no circumstances should he exercise within one hour after eating, and it will prove still better if he make the interval two hours.

If, as is commonly the case, vascular pressure is increased, treatment must be directed to that condition.

The question of drink restriction, I believe, should be decided after thorough examination of the patient and an investigation as to his habits, and not by any preconceived ideas on the subject. Given a patient who has been in the habit of drinking too little and whose urinary quantity is below normal, it is good practice to advise regular drinking of some pure spring

water. If, on the other hand, he has been over-indulgent, and renal action has been good, he should be limited. In the latter case, it is wise practice to advise him to limit the supply of liquids taken with his meals to eight ounces.

Myocarditis with Evident Incompetency.—When the case has progressed to the stage of evident incompetency, as exhibited by breathlessness, præcordial pain or tachycardia following exertion, the most stringent measures are required to prolong life. Cure is impossible at this stage. All that we can promise is partial restoration to health. Under no circumstances should we permit ourselves to give too gloomy a prognosis; because, in the first place, the heart is a very tolerant organ, and is oftentimes capable of repair under most adverse conditions, and, in the second place, we never know what we can do until we have tried.

In all cases of myocardial efficiency, I believe that *the first remedy is absolute rest in bed*. How long this should be continued can never be stated beforehand. If we are to make any mistakes in judgment, it should be in the direction of rigidity rather than laxness. Late in May, 1907, I was consulted by a gentleman, who announced himself a sufferer from chronic ptomaine poisoning (his own diagnosis). After sitting in my office for half-an-hour, he still had a pulse of 140; his heart action was highly irregular, and the organ was greatly dilated. After two weeks' rest in bed, his pulse reached 100 per minute; at the end of a month it was normal. At his earnest solicitation, and then only when I was satisfied that easy walking produced only slightly increased frequency of the pulse, I permitted him to visit friends in the East. One month after leaving me he died suddenly. While the case was a bad one, and possibly could not have been gotten into good condition by prolonged treatment, I have always regretted that I did not insist upon the full term of three months in the Hospital, as originally planned. Another case treated eight years ago was kept in bed for six months, requiring close attention both day and night during that period. She is still alive, and up to the past summer was in comparatively good condition. As I write, she has just begun to show the signs of renewed myocardial incompetency. The value of the rest treatment in her case is made all the more evident in that she was a person who by nature was intolerant of inactivity; but who possessed herself of a philosophic spirit when the demands of the case were explained to her.

Romberg, Fraentzel, and others condemn the rest treatment of myocardial degenerations, insisting that cases show a downward tendency when rigid rest is enforced. Undoubtedly, there are cases of this character; but I believe that they may be ignored, so far as general working rules are concerned. Some of them are persons whose temperaments will not permit them to rest. They may be physically quiet, but mentally they continue energetic and chafe under restraint. The remainder have usually

progressed to such a stage of myocardial degeneration as to make any treatment hopeless. Of course, there comes a time in all cases when rest ceases to be beneficial and the patient must be about. To continue the rest beyond that period will certainly cause the loss of all that has been previously gained.

Part of the objection to the rest treatment of myocardial disease is based upon the value of fresh air as a restorative. This can be overcome very readily by having the patient take his rest in a room with open windows, or, if he resides in the rural districts, on a porch.

It is more than likely that the advocates of exercise cannot have in mind the severe cases to which I have reference, for it is inconceivable to me that such patients could survive more than a few weeks if permitted to go about. Certainly, they are not the subjects for the Oertel or resistance exercises, for I have seen them made worse thereby.

There comes a time in all cases when they should be gotten out of bed, and gradually resume their usual activities. At first they should be permitted to rest in a chair for an hour or so. This experiment successfully performed, the time out of bed should be increased day by day, until the practitioner feels that he may safely order a little walking. In this he must be governed by his knowledge of his patient, and his experience in managing him and his heart during the rest period. The sooner the exercises can be conducted in the open air the better.

The best system of exercises is that devised by Oertel. Its value is attested by the fact that it still remains popular after twenty-five years. It can be advised only for patients whose hearts are still in sufficiently good condition to build up. If it is conducted outside of a sanitarium, and without the assistance of a nurse, the patient must also be a person of good judgment. Briefly, it may be described as graduated hill climbing. All walks are started on the up-grade. At first the patient practices on an incline of two or three degrees, and for a short distance—it may be only a few steps—at first. When he has proven himself able to accomplish this task without any cardiac embarrassment, he is assigned a greater acclivity, *e.g.*, five degrees. Throughout the training, the patient is never permitted to experience respiratory or cardiac distress.

The diet of patients with myocardial disease must be governed by indications. As a rule, the quantity of food allowed should be less than normal, because of their limited physical activity. When arterial tension is increased, they should subsist very largely on vegetable articles. Still, this injunction should not be enforced too rigidly, lest general nutrition suffer thereby. The present popularity of dry diet or drink restriction in particular should not be persisted in unless it is found to agree. Many times will we meet with patients in whom the condition of the digestive tract demands the lightest and for the most part liquid foods. It should, further-

more, be remembered that in myocardial inadequacy the digestive apparatus receives an imperfect supply of blood, as does also the rest of the system. It is, therefore, necessary that we administer nourishment that shall tax the digestive apparatus to a minimum. We may find, indeed frequently do, that patients cannot tolerate the ordinary liquid diet, and we are obliged to resort to peptonized milk, koumyss, predigested broths, and the like. Thomson * recommends the "leben" of the Arabs or the "matzoon" of the Turks. The "Leben" is made as follows: "Break up by thorough stirring half an ordinary yeast cake in half a pint of good fresh milk, which has been warmed to a blood-heat. This should then be kept for eight to ten hours in a kitchen, with occasional stirring, at the end of which time the milk will be found to have soured. Six tablespoonfuls, or three ounces of this soured milk, should then be stirred into half a pint of fresh milk, and the first half pint with the yeast thrown away. The second specimen will ferment in the same time as the first one did, but cannot be eaten on account of the still perceptible bitter taste of the yeast; but three ounces of it can be used for the third specimen. In the fourth specimen, the taste of yeast is no longer perceptible, and then the leben can always be made for each day's use in the proportion of six ounces of the leben of the previous day to one pint of new milk. It is better to stir it well as soon as the milk is found to be changed, and then put in a refrigerator to prevent further acidification. Sometimes, after a month or two months, the yeast ferment seems to die out, and the process has to be begun over again as above detailed. If it seems to make too large curds, it need only be stirred before eating it. The richer the milk in cream the better and smoother the leben. With this milk and a digestible vegetable diet (excluding beans, asparagus, and fibrous vegetables, as turnips, beets, etc.), and a good supply of ripe fruit, especially grapes, the tension of the pulse may be found soon much less than when meat and fermented liquors have been largely used."

In all cases of myocarditis it is important that the patient have a daily evacuation of the bowels. Constipation not only promotes auto-intoxication, but it brings about increased vascular pressure. If the bowels cannot be regulated by diet, then the patient should take, as found to be indicated, Magnesium sulphate in saturated solution or Sodium Phosphate in the morning before breakfast.

No review of the treatment of myocarditis can be complete without a description of the Schott treatment by carbonated baths and resistance exercises. The majority of physicians who have investigated the subject are enthusiastic in its praise. A minority look upon it as a treatment efficient only when taken at Nauheim, at which place the patient leads such a quiet and orderly life that he cannot help improving if his myocar-

* Hare's *System of Practical Therapeutics*, 2d edition, vol. ii, p. 340.

dium has any recuperative power. From what I have seen of these cases, I am impressed with the idea that the patients who go abroad for the treatment are almost exclusively those with but a moderate degree of incompetency. Were it otherwise, they could scarcely be expected to reach their destination safely. It hardly seems possible that the high degrees of myocardial weakness which we treat in their homes can be submitted safely to the journey abroad, and again on their arrival undergo a trying course of treatment which results in so-called recovery within a comparatively short space of time. Snader* has formed a very favorable view of the treatment as the result of his visit to Nauheim in 1897. Bezley Thorne has shown his appreciation of the treatment by writing a small monograph, which has now passed through two editions. Snader describes the waters arising from two springs employed as baths as follows:

"1. 'The Great Sprudel' (spring No. 7), containing briefly, among other ingredients, chloride of sodium, 3.03 per cent. and carbonic acid gas, 0.392 per cent. at the natural temperature of 32° C. (89.6° F.).

"2. Spring No. 12, 'Friedreich Wilhelm Quelle,' is the second bath, containing chloride of sodium, 3.55 per cent. and carbonic acid gas, 0.361 per cent. at a temperature of 33° C. (91.4° F.).

"3. Simple saline baths. The ordinary brine baths is one from which the carbonic acid has been removed, this result being produced by exposure to the atmosphere, and by the removal of a certain amount of salts. These baths can be regulated as to the amount of saline and other solid material by the addition of a more or less uncrystallized extract obtained from the original springs by evaporation and concentration by boiling. This substance is known as '*mutterlauge*' (mother-lye), and is very rich in chloride of sodium and bromine. This mother-lye is used most extensively to gradually and systematically (as is demanded by individual cases) to strengthen other baths, more particularly the thermal brine baths, or weakened by the addition of common water. The temperature, of course, can be regulated at will."

"The waters contain many ingredients, but the most important are considered to be the Chloride of sodium, the Chloride of calcium, and, above all, the carbonic acid gas. These three elements, according to Schott, are the active ones in producing favorable issues secured at Bad Nauheim. The closest possible discrimination in the manner of administration of the baths is practiced. The time, the temperature, the strength, the period over which the baths shall be continued or interrupted, are all matters of profoundest attention on the part of attending physicians."

"A course of baths is usually of six weeks' duration. Some patients with progressive lesions return annually; others secure enough benefit to

* *Hahnemannian Monthly*, January, 1898, p. 1.

last them for a year or two, or are even permanently benefited. The official season is from the 1st of May to the 1st of September."

"The effects of the baths are to produce a slight sensation of chilliness, followed in a few minutes by an agreeable sensation of warmth. The respirations are at first deepened, and a sensation of præcordial, pulmonary or epigastric oppression is observed. These oppressive sensations are usually temporary. The bather comes out of his tub with a cutaneous covering of rosy tint in consequence of the irritating effects of the bath and the consequent dilatation of the superficial capillaries. This red coat is less marked in the thermal brine, more marked in the sprudel, and reaches its highest degree in the sprudel flowing effervescing bath. The therapeutic effects are a diminished size of the heart, a slowing of the pulse, a filling of the arteries, a relative emptying of the veins, enlarged cutaneous capillaries, a diminution in size of an enlarged liver, and increased diuresis. The baths often bring out latent troubles, as gout, rheumatism, syphilis, etc. By strengthening the beat, they sometimes develop a murmur of a previously unsuspected valvular lesion."

Forchheimer* considers that "the factors that contribute to beneficial effects in this treatment are the CO_2 , and the temperature of the bath; the greater the quantity of CO_2 in the water the lower the temperature, and the longer the duration the greater the effect. It will immediately be seen that in the combination of these three factors we have an ideal method for graded treatment, and such it has shown itself to be after at least twenty years of experience. The effects produced are the result of irritation of the sensory nerves by the CO_2 and the temperature, which is followed by increased blood-pressure, lasting after the patient is removed from the bath, and by a decided slowing of the pulse. Thus the distribution of the blood is altered, more going to the skin and muscles; the splanchnic circulation is also increased by the peripheral reflex. The stimulation of the cardiac reflex through the periphery produces increased systolic contractions of the heart, as well as possibly increased diastole."

Snader expresses as his opinion that the small quantity of iodine and bromine contained in the waters exerts some therapeutic action.

The most practical and least expensive method of administering the baths at the patient's home or in a hospital is that recommended by Forchheimer, as follows:

"At first I always used the 100 to 300 grm. of Calcium chloride plus the carbonic acid gas generators used by Schott; at present I think I get the same results with the CO_2 generators without further additions; possibly more CO_2 may have to be used in this way to produce the effect, but this is immaterial. The CO_2 is generated by the addition of Hydrochloric acid to Sodium bicarbonate; neither of the drugs need be chemically pure.

* *Prophylaxis and Treatment of Disease*, p. 386.

The Sodium bicarbonate is dissolved in the water contained in a bath-tub ; the Hydrochloric acid is afterwards introduced in the following way : a closed bottle is held under water with the neck downward, so that when the stopper is removed the acid diffuses itself along the bottom of the bath-tub ; this is facilitated by moving the bottle along the bottom of the tub. It is a good plan to diffuse the HCl, especially along the foot-end of the bath. The patient steps in at the head, and as the result of his getting into the bath in this way and lying down, head to head-end, the water is disturbed, CO₂ production goes on, and if any acid is left not sufficiently diluted, which is improbable, no harm is done to the skin. After the Sodium bicarbonate has been thoroughly dissolved, the temperature of the water is taken ; again after the addition of the HCl, as this may produce a rise, necessitating the addition of cooler water. The quantity of Sodium bicarbonate and of HCl is always equal, beginning with 100 grm. each, then 250, 600, 1000 to 1500, which is the strongest bath used.

" The ordinary bath-tubs cannot be used as the acid attacks the lining ; porcelain or wooden tubs should be used. The temperature of the bath varies from 90° F. to 92° F. to 75° or 80° F. The time of the bath is from five to fifteen or twenty minutes. The first bath should be given at a temperature of 90° F., of five minutes' duration, and 100 grms. each of Hydrochloric acid and Sodium bicarbonate. According to the nature of the patient and the effect of the first bath I increase the CO₂ and the duration of the bath ; as high a temperature as 93° F. is rarely necessary in this country on account of the widely-spread custom of taking cool or cold baths. If the patient does not bear reduction in temperature well, the increase in duration and CO₂ should still be continued. Some patients prefer to begin with a low temperature ; one patient under my charge began with 60° F., not feeling comfortable in any other temperature. When the temperature is too low and the patient begins to shiver, he must be immediately taken out of the bath, and the next time the temperature must be higher. After the bath the patient is dried off as gently as possible, and then he should rest in bed for one or two hours. Baths should never be taken immediately after meals ; two hours at least should be permitted to elapse. Increase in the strength of the baths is determined by the presence of good effects and the absence of bad ones. When the patient feels better after the bath, when his pulse is fuller, stronger, and slower, the strength of the next bath may be increased. When he feels worse during or after the bath it may be well to omit it for a day ; certainly, it would be unwise to increase its strength. The object of the treatment is attained when the patient can stand the strongest baths. The duration of the treatment varies ; I never undertake it unless the patient will give me four full weeks ; in a number of cases it will be necessary to continue it as long as eight weeks. The number of baths required depends entirely upon the individual peculiarities and necessities of the case ; no rule can be laid down."

The contra-indications for the baths are myocardial insufficiency of the second degree, acute processes existing alone or engrafted upon a chronic one, severe angina pectoris, embolism, aneurysms, cerebral hæmorrhage, and the cerebral form of arterio-sclerosis.

The exercises recommended as part of the Schott treatment are the following :*

" 1. The arms are extended in front of the body on a level with the shoulders and with the palms of the hands touching. They are then slowly and steadily moved outward until at a line with the front of the chest, while at the same time the attendant gently resists this horizontal movement. The attendant now changes his hands, so as to exert pressure against the palmar surface of the wrists, and the patient slowly and steadily brings his arms back to the position whence the original movement started.

" 2. The right arm hanging at the side with the palm of the hand forward, the forearm is slowly flexed against counter-resistance by the attendant until the fingers touch the front of the shoulder. The attendant then changes his point of pressure to the back of the arm, and the extremity is slowly returned to its former position at the side.

" 3. This consists of precisely the same movement, but executed by the left arm.

" 4. Both arms depending at the side are slowly raised laterally until the thumbs meet above the head, and are then brought down to their original position, these movements being carefully resisted throughout.

" 5. The patient clinches his hands in the form of a fist, but with the thumbs extended upon the ulnar surface of the index fingers. The tips of the thumbs are then gently pressed together in front of the abdomen, and, a proper degree of resistance being offered, they are thus slowly raised until the hands rest on the top of the head, after which they are slowly lowered to the original position.

" 6. The arms, depending at the sides, are then elevated forward and upward without bending them until they are held aloft on a line with the perpendicular axis of the body. They are next slowly allowed to resume their position at the side in the same careful manner in which they were raised. To properly resist this movement requires much practice and skill, for the reason that the hand of the attendant must be continually slipped around the patient's wrist to suit the changing attitude, first to the horizontal and then the vertical.

" 7. Starting with the arms hanging at the side, the right arm is slowly rotated forward, backward, and downward around the shoulder joint as a pivot, and then in the reverse direction until the circle is completed, counter-pressure being all the time exerted by the attendant.

* Babcock : *Diseases of the Heart and Arterial System*, p. 456, et seq.

" 8. This consists of a similar movement, executed by the left arm. These two movements are difficult, both for the patient and the attendant, and should not be given to patients who are very weak or whose hearts are incapable of withstanding much exercise. Resistance to this movement is likewise extremely difficult, for the reason that the attendant has to change hands during the progress of the movement, yet without causing jerkiness or too much interference.

" 9. The patient bends his body forward at the hips without flexing his knees, and then brings it back to the erect position, while the attendant, standing at his side, resists the forward movement by one hand against the upper part of the sternum and the other in the middle of the back, and the return movement of the trunk by one hand against the upper dorsal region and the other upon the epigastrium.

" 10. Standing with the feet firmly planted upon the floor, the patient rotates his trunk around its vertical axis, at first to the left, next to the right and then back, so as to face forward, as before starting. The attendant resists this movement by placing one hand against the advancing shoulder, and the other in the opposite axilla, and then changing his hands as the body is rotated in the opposite direction.

" 11. In this movement the trunk is bent laterally, first in one direction and then in the other, and lastly is brought to rest in the upright posture. To resist this flexion, the attendant places one hand upon the hip and the other against the side of the chest towards which the body is bent.

" 12. Both arms hanging at the sides, with the palms facing towards the thighs, are simultaneously moved backwards and upward as far as possible without bending the body, and are then brought down to the sides, resistance being carefully exerted by the attendant.

" 13. The patient supports himself by resting one hand on a chair, and then raises the opposite leg as far as possible in a lateral direction, while the attendant resists both the upward and the return movement.

" 14. This is the same movement done with the opposite extremity.

" 15. Resting one hand on a chair, as before, the patient extends his opposite leg and thigh, but without bending his knees, as far forward and upward as possible, after which the extremity is slowly returned to its original position, resistance to both movements being offered by the attendant.

" 16. This is a similar effort put forth by the opposite extremity.

" 17. Both hands supported on the back of a chair, one leg is flexed at the knee, while resistance is offered by the attendant's hand placed at the heel. The return is resisted by the hand against the ankle just above the instep.

" 18. This is a corresponding movement by the other leg, resisted in the same manner.

" 19. Supporting himself by the back of a chair, the patient flexes his

thigh at the hip, the leg hanging limp and flexed, while the attendant resists first the upward and then the downward movement.

"20. This is a similar movement of the opposite thigh."

In the practice of the above-described movements several important precautions must be enjoined that we may secure success. The operator must insist that his patient be thoroughly relaxed and breathe naturally during their performance. Each movement must be executed slowly, and is not to be repeated at the same seance. A brief interval should elapse between movements. The resistance offered by the operator should be as light as possible at the first seance; subsequently it may be increased as indications warrant. When there is doubt as to the patient's ability to take the exercises, the first treatments should be given with him in a recumbent posture. It is a wise plan to give but five or six exercises the first time in order that we may test the patient's endurance. The operator should remember that he is giving the patient "resistance exercises." Hence, he should not grasp the patient's arms or wrists, etc., tightly, but should offer easy resistance to the performance of the exercises; this and nothing more. Exercises should never be executed until at least two hours after a meal. Finally, and a most important matter, *the exercises should cease as soon as the patient gives the slightest evidence of embarrassment of cardiac or respiratory function.*

Medicines.—The cardiac tonics are not to be used indiscriminately in the treatment of myocardial degeneration. Indeed, most cases do better without them. As a rule, they are not to be regarded as indicated in any case which is able to go about. This latter injunction is frequently announced concerning Digitalis, a fact which would lead us to regard that remedy as particularly dangerous. Myocardial patients who are able to go about are not in need of stimulation; that states the case briefly and correctly. If they do need stimulation, they should be in bed. Of the cardiac stimulants, Digitalis holds a high place in the minority of cases of myocarditis in which it is indicated. Its beneficial influence is due, however, not so much as to its direct action on cardiac function, as to the improvement it works on the nutrition of the heart muscle. It should never be administered, however, when vascular pressure is high, as it will throw additional work upon the heart without securing any compensatory advantages. It should then be given in conjunction with Sodium or Strontium iodide in doses of five to ten grains, well diluted, three times daily. These latter drugs not only reduce vascular pressure, but they also exert a beneficial influence on the nutrition of the cardio-vascular system.

Other cardiac tonics, as Strophanthus, may also be prescribed, their exhibition depending upon the indications afforded by the previous section. In every case it should be borne in mind that they are not to be given in large doses.

The various Nitrites will prove useful as a means of relieving high vascular pressure.

Among other remedies capable of exerting a beneficial influence on cardiac nutrition may be mentioned specifically, *Aurum muriaticum*, *Baryta carb.*, *Sajodin*, and *Strychnia*.

For indications of homœopathic remedies, the reader is referred to a subsequent section of this chapter, dealing with cardiac remedies and their indications.

Angina Pectoris.

The problems involved in the management of a patient with angina pectoris involve a study of the measures necessary during the attacks, and those required in the intervals between seizures, either for the purpose of postponing a recurrence or for effecting a radical cure. Inasmuch as the existence of the disease is never known until the patient has had a seizure, the first problem is the treatment of the patient during the paroxysm.

The first thing is to place the patient at absolute rest as quickly as possible. No time should be lost in removing the patient to his home, for such a procedure takes time, and requires a certain amount of exertion, which, under the circumstances, may have a serious termination. It is better by far to take care of the patient at a convenient hospital near to the place of seizure. Later, when the paroxysm has disappeared, and a fair degree of strength has been restored, he may be taken to his home.

When vascular pressure is increased, the best remedy for immediate relief is *Amyl nitrite*, which should be given by inhalation in doses of two to three minims. In the absence of this drug, *Glonoïn* 2x in doses of one minim may be prescribed. This drug is inferior to the Amyl nitrite, however, because it is slower of action. It may be prescribed with advantage when the high blood-pressure tends to return after reduction by the former drug. It is said that it acts more satisfactorily when it is dropped on the tongue, and permitted to be absorbed by the mucous membrane of the mouth. The Amyl nitrite should not be repeated unless the high vascular pressure is persistent. In most cases, the Glonoïn should not be given oftener than once in six hours, and not even at that interval if the headache excited by the first dose still persists. In patients who exhibit a well-defined arterio-sclerosis the nitrites are better tolerated, and, in some instances, the doses above advocated as suited to the majority of cases are insufficient.

When it is evident that a cardiac stimulant is required, those of a diffusible character should be prescribed, Hoffman's anodyne, Camphor, Whisky, Valerianate of Ammonia, Aromatic Spirits of Ammonia, being the most satisfactory. Digitalis and Strychnia are utterly useless during an attack. Aconite should never be prescribed at such times excepting in minute doses when indicated by the symptoms. As a physiological remedy it is useless if not actually harmful.

If the pain continues despite the action of the nitrites, or if blood-pressure is not increased, *Morphia* may be prescribed for the relief of the pain. It should be given in doses just sufficient to take the severity of the pain away, and never with the idea of producing complete relief. For this purpose, it should be administered in doses ranging from one-eighth to one-quarter of a grain hypodermically. This drug can do no harm when thus administered, and yet it should be used with circumspection. It is only a question of time in the case of most patients subject to paroxysms of angina pectoris when an attack shall prove fatal. If such a result follows the hypodermic administration of *Morphia*, the ignorant or the prejudiced may draw incorrect conclusions as to cause and effect.

Chloroform, which has been advocated by some authorities, and is employed by many physicians, impresses me as a dangerous remedy. Its use is certainly irrational in patients who are known to be suffering from a degenerated myocardium. It is given by inhalation, but never to the extent of producing greater anæsthesia than a mere mental cloudiness.

While the physician is prescribing drugs according to indications above outlined, attendants should procure hot-water bottles, which should be applied to the extremities and over the præcordium.

Special remedies often indicated during the paroxysms include *Cratægus*, *Cactus*, *Strophanthus*, and *Digitalis*. *Cactus* should not be prescribed in the arterio-sclerotic cases, as its symptoms suggest its use in only what have been called the neuralgic and vaso-motor cases. Hale refers to *Anhalonium* 1x in one minim doses as useful in cases presenting the *Cactus* symptomatology, but in which that remedy fails.

Thomas, of the eclectic school of medicine, recommends drachm of the specific tincture of *Lobelia* to relieve the paroxysms.

After the cessation of an attack, patients should be kept in bed for at least two weeks. If the physical signs indicate a chronic myocarditis, the treatment already recommended for that affection should be put in force, and the absolute rest made a prolonged one ; or the Oertel or the Nauheim system may be tried.

The curative treatment of angina pectoris is to be enforced during the interparoxysmal periods. Attention to the cardiac symptoms then becomes subsidiary to those of a general character, as it is through the latter that the etiological factors in each case are reached. Special attention must be paid to the diet with the idea of preventing indigestion and relieving auto-intoxications. Above everything else, the patient should avoid eating to excess.

Flatulence in particular must be avoided. When it does occur, and causes disturbance of cardiac functions, a teaspoonful of Hoffman's anodyne in water will bring prompt relief.

Inasmuch as paroxysms are apt to be brought on by unusual physical

exertion or violent mental emotions, the patient should take things quietly in all particulars. Above all things, he must avoid hurrying for trains or street cars, and if he is obliged to climb flights of stairs, he should continue his upward path only so long as it does not interfere with his respiration or does not cause cardiac sensations. He must avoid walking against strong winds.

Owing to the influence of extremes of heat and cold upon blood-pressure, the patient should be instructed to keep his hands and feet well protected when out in the open air. It is also a good plan for him to protect his chest by an extra thickness of flannel or chamois.

While limitation of diet with the view of obviating gouty seizures or preventing auto-intoxication is of the highest importance, too much attention must not be paid to this matter, for it is possible by so doing to make it monotonous, and produce poor appetite and bad nutrition. The articles of food which are especially open to criticism include meat extracts, rare and preserved meats, and internal organs, because they are rich in purin bodies.

Tobacco is harmful in all cases, and must be positively forbidden. It is better also that the patient refrain from all alcoholic liquors, although occasional indulgence in brandy or whisky is not harmful.

Exercise as a remedy is without value excepting in those cases in which the Oertel or Schott system is indicated.

The remedies useful during the interparoxysmal period are pretty much the same as those indicated in arterio-sclerosis and myocardial degenerations. *Arsenic* and the *Iodides* unquestionably occupy the first place on the list, and are held in much favor by practitioners of both schools. *Arsenicum album* is so distinctive of the anginal seizure and its effects on tissues such as lead many homœopathists to make it almost a routine remedy. We find, for example, among its symptoms, "sudden tightness above the heart; agonizing præcordial pain; pains in the occiput and neck; anxiety, oppression and difficult breathing, fainting spells; least motion makes him lose his breath; worse at night, especially from 1 to 5 A.M.; pulse feeble, irregular, intermittent; paroxysms recurring regularly." * Some physicians prefer the Iodide of Arsenic, given in the second or third decimal trituration three to four times daily over an extended period. Ringer, quoting Anstie approvingly, regards Arsenic as a most important remedy in reducing the frequency and severity of the attacks.

The Iodides are used mainly as nutrition remedies. The claim that their curative value rests upon their ability to reduce vascular pressure is by no means certain, for they are of benefit in many cases in which vascular pressure is below normal. It is important, however, that in the latter class of cases they be used in small doses.

* Lilienthal: *Homœopathic Therapeutics*, 3d edition.

Hughes places his main dependence upon Arsenic, but suggests as additional remedies "in the spasmodic form, *Hydrocyanic acid* and *Cuprum*, the former in recent cases, the latter in those more advanced; and in those purely neuralgic, *Spigelia*."

Spigelia is the favorite remedy of Jousset. He says of it: "It corresponds to the agonizing substernal pain extending to the neck and down the arms, to the irregularity of the pulse, tendency to syncope, palpitations, and aggravation from the least motion." "I (Jousset) usually begin with the third dilution three to four doses per day. I then give three drops of the mother tincture, or I go higher up, to the 6th, 12th and 30th, according to the susceptibility of the patient. I know of several cases in which this remedy has in my hands effected permanent cures or long-lasting ameliorations."*

Aurum muriaticum is useful mainly because of its beneficial influence over arterio-sclerosis.

Other remedies to be considered include *Bryonia*, *Cimicifuga*, *Kalmia*, *Lachesis*, *Lilium*, *Cactus*, *Naja*, *Nux vomica*, *Cratægus*, *Anhalonium*, and *Latrodectus*.

Bryonia is indicated by the character of the pain, rather than by any special pathological relationship to angina pectoris or its causes. The paroxysms are brought on by emotional influences, as fright or anger; the pain is of a cutting character, and is aggravated by the slightest motion; dull pain extending down the left arm to the fingers; sensation of oppression.

Cimicifuga and *Lilium*, though highly recommended by some physicians, would seem from their pathogeneses to be indicated in the pseudo-anginas of hysterical origin.

Kalmia is indicated in anginal attacks occurring in patients who have fatty degeneration.

Nux vomica stands next to *Spigelia* in the estimation of Jousset. He makes the presence of hæmorrhoids and the terminations of the paroxysms in vomiting as important indications.

Latrodectus has been used successfully in several cases by Linnell, of Norwich, Conn.

The various heart tonics are, as a rule, contra-indicated in anginal patients. They sometimes prove useful in the dilutions, when indicated by special symptoms. In those exceptional cases in which blood-pressure is low, *Digitalis* may be prescribed with advantage in the ordinary physiological doses.

* *Practice of Medicine*, p. 868.

Palpitation and Tachycardia.

Inasmuch as palpitation of the heart and tachycardia are practically always symptomatic of some other affection or dependent upon some active cause of constitutional weakness, treatment of these symptoms must be directed mainly to the underlying conditions. In a very large proportion of the cases, the essential cause is neurasthenia or hysteria, which must be managed according to the rules laid down in a later portion of this work (*vide* articles on Hysteria and Neurasthenia). Even though we satisfy ourselves that the primary condition is a general neurosis, we must go still deeper and determine the cause of the latter condition. It may be temperamental, in which case education only is of avail; it may be due to enteroptosis, overwork, sexual excesses, etc. In some few of these cases, the disturbance of the cardiac function alone is evident, other neurotic manifestations being noteworthy either for their absence or unobtrusiveness. With the discovery of the causes the treatment becomes self-evident.

The cases susceptible of most ready cure are those in which the cardiac disturbance is dependent upon some one particular bad habit, as indulgence in tobacco, alcohol, tea, or coffee.

A class of cases very difficult of cure is one which we may call cardiophobia. The patient by reason of the disagreeable sensations referred to the præcordia imagines that he has organic heart disease, and then jumps to the conclusion that he is in constant danger of sudden death. Such patients should be examined most thoroughly at their first visit. No means of eliciting information as to the patient's condition should be neglected. After the condition of the heart is determined, other organs should be investigated. Then, if facts warrant it, the patient should be told most positively of the functional or neurotic origin of his complaint, and that he is in no danger of death from that source. Directions as to mode of life must be given, care being taken that the directions are not such as to still further increase his morbid thoughts. At subsequent examinations, as little attention should be paid to the heart as possible; for if the physician, despite his former assertions that the heart is not diseased, persists in making the heart the chief point of examination, the patient will lose confidence, and permit his fears to be reawakened.

Some cases are due to gout and other auto-intoxications. The treatment is then one of elimination.

It must not be forgotten that palpitation is sometimes a manifestation of organic disease. Such cases are usually characterized by rapid action of the heart under slight exertion. The treatment of such cases is summed up in the single word "*Rest.*"

Many cases come under the physician's care during an attack. The

most important element of the treatment then is the conduct of the physician, which should be such that by his manners alone the fears of the patient and family are at once quieted. Quiet assurance, prompt action, and lack of fussiness and garrulity become invaluable remedies. As a rule, the quality of the pulse is such as to make a stimulant absolutely useless. Should it be weak, brandy, ammonia, or camphor may be prescribed, and heat applied to the extremities. Digitalis and other heart tonics are never indicated. If vascular pressure is high, the nitrites may be prescribed with success. Ice-bags to the præcordium act wonderfully well in quieting the excited action of the heart. With these general measures, the indicated remedy as outlined in the pages on heart remedies (*vide* page 650) should be prescribed. If the attack persists despite the above measures, Morphia should be administered hypodermically in doses of one-quarter of a grain.

Special remedies that have been recommended from a physiological standpoint include *Aconite*, *Camphor*, *Cimicifuga* (in climacteric cases), *Sparteine*, and *Convallaria*.

Increased Vascular Pressure.

Increased vascular pressure is but a symptom, as explained in my work on Diagnosis. These are occasions, however, when it becomes a source of discomfort or suffering to its victims, while it also gives rise to additional pathological changes. On the other hand, it is oftentimes a conservative condition, as shown by the fact that in certain diseases the lowering of blood-pressure brings with it a train of symptoms which disappear when blood-pressure increases under treatment. To reduce blood-pressure to a theoretical standard of 125 to 150 mm. for no special reason other than its existence is bad practice. Before one should undertake to combat it by special measures, he should determine that it is doing harm.

The treatment of high blood-pressure involves attention to the diet of the patient, his habits as to exercise, drinking, and smoking, and the administration of medicines.

Diet.—This should be so regulated that the patient shall take food which has the least stimulating effect on the circulation, and leaves a minimum of waste products to be taken care of by the emunctories. To this end, it is generally admitted that animal foods, as meats, must be limited in quantity. The popular belief that red meats are especially pernicious has long since been shown to be a heresy, for the so-called lighter meats are equally harmful when taken in improper quantities. The matter of cooking is of greater importance than the character of the meat. Roasted and fried meats are rich in extractives; boiled meats are not. Hence, the latter should be ordered by preference.

Patients must be nourished; so to atone for the loss incident to depri-

vation of meats, there must be a corresponding increase of green vegetables and fruits, care being observed that the carbohydrates are taken in moderation.

The daily quantity of food consumed should be based upon the nutritive needs of the body, the questions of present weight as compared to the standard of the individual's height, and reduction or increase of flesh being duly considered.

For the general run of cases, the intake of fluids should be reduced. Pure water is the best drink, and should be taken on an empty stomach. But here we have an added problem to consider, The patient with high blood-pressure is frequently the subject of an auto-intoxication, for which liberal allowances of water constitute an important item of the treatment. Indeed, the toxæmia is often the sole cause of the high blood-pressure.

The indulgence in coffee and tea must be considered according to the clinical study of the case. In all instances they should be taken within moderation. There can be no objection to either of them, if observation shows that they do not produce any of the ordinary nervous phenomena known to follow in their wake.

Alcoholic beverages are better let alone; certainly so in the cases of individuals who have not been regular indulgers. On the other hand, when we are dealing with persons long past the prime of life, and who have been regular imbibers for years—I do not refer to what is known as excess—it is generally unwise to advise total abstinence. When dealing with individuals who have been taking the alcoholics to intoxication or limits of tolerance, we must bring them within the realms of moderation, or, if they cannot do this, we must insist upon their becoming abstainers.

One of the latest subjects in dietetics is "salt restriction." It seems to be generally admitted that an excess of sodium chloride in the food is harmful in interstitial nephritis and other conditions with renal inadequacy; and it is just these morbid states which are associated with high blood-pressure. Dechloridization has therefore become an important dietetic system. To be efficient, we must not only limit the quantity of salt taken as a condiment but also take some cognizance of the amount of sodium chloride contained in various foods. Such a diet cannot be maintained for any prolonged period of time, because it is distasteful to patients. The special foods which may be mentioned as containing the minimum of sodium chloride include green vegetables, fruits, nuts, fats, potatoes, rice, and sugars. Some endeavor to overcome the objections of patients to the saltless diet by causing them to live on milk exclusively. As a rule, one will find that the object is best attained by limiting the diet to milk and vegetables. In this, as in all other subjects medical, the physician must not be empirical and dogmatic. Each case must be studied on its merits. The output of sodium chloride by the urine must be determined, and the daily progress of the patient must be studied.

As to tobacco, we must again study our cases. In a general way, it may be said that patients are decidedly better off without it. But we often have to deal with individuals who have been excessive consumers of the weed for years, and the most we can demand of them is that they do not go to excess.

Rest is very important in all cases ; but its character must be regulated according to the exigencies of each case. When it is necessary to keep down an exceedingly high pressure, it must be made absolute. In no case should patients be permitted unbridled license to exercise at all times and in any manner. Too many times individuals of sedentary habits do themselves harm by following this course. When absolute rest has been ordered, it need not, as a rule, be continued over a few days, by which time the blood-pressure is found to have fallen within the limits of safety. Then we should caution the patient against sudden and undue efforts, permitting him to indulge in walking at a moderate gait. In all cases and for all time, the patient should have a period of comparative rest after each meal.

Attention to regular movement of the bowels is necessary. Constipation increases blood-pressure permanently by the associated auto-intoxication, and paroxysmally by the hard straining at stool.

As to remedies, I need refer to the sections on chronic heart affections and interstitial nephritis.

Aneurysm of the Aorta.

One cannot afford to be dogmatic in dealing with the treatment of aortic aneurysm, because in many cases in which the disease has been diagnosed and believed to have been cured, no signs of the lesion were discovered at autopsy some years later ; then again, it has been proven beyond peradventure that some cases of saccular aneurysm communicating with the main bloodvessel by a small opening, spontaneous cure by coagulation of the contained blood has taken place. Notwithstanding these facts, we still have certain therapeutic data which go to show that treatment is oft-times of avail.

In a general way it may be said that our treatment of aneurysm should follow in the lines suggested by the natural cures of the disease, namely, the securing of coagulation of the blood within the sac. Inasmuch as the aneurysmal walls are necessarily weakened, and ultimately death takes place by rupture and hæmorrhage, we should endeavor to postpone that result by advising the patient to refrain from unusual exertion and follow a mode of living which shall keep intravascular pressure at a minimum consistent with comparative health. The dietetic rules which have been formulated as suited to patients the victims of increased blood-pressure should be enforced. In a general way, these include the avoidance of over-feeding, a predominance of vegetable foods, milk and eggs in moderation, and a limitation as to meats.

Tufnell's Treatment.—This method of treatment of aneurysm was proposed by Tufnell,* of Dublin, many years ago. It consists in placing the patient at absolute rest in bed and keeping him on a very restricted diet, which is as follows :

Breakfast.—Two ounces of bread with a little butter and two ounces of milk.

Dinner.—From two to three ounces of meat without salt, and four ounces of milk or claret.

Supper.—The same as breakfast.

A diet thus restricted can only be enforced by keeping the patient in a hospital or under the constant care of a competent nurse. The great inconvenience, and even suffering experienced by the patient during the three months it is enforced, makes the treatment an impracticable one in the majority of cases. It is obvious, moreover, that the long period of starvation must produce a profound anæmia or prostration, which will require additional time before the patient can be considered in fairly good health.

Instead of the Tufnell treatment, we may adopt the diet suggested by Broadbent, namely, concentrated food in small quantity and the limitation of fluids to twenty-four to forty ounces in the twenty-four hours. Even this treatment is liable to become burdensome to the patient.

The object in view in the formulation of a diet in the treatment of aneurysm is the production of blood, which shall be as condensed as possible, thus favoring an increased proportion of fibrin and relatively easy coagulation. While special dietetic cures are not popular as exclusive methods of treatment, we may restrict the patient within reasonable limits when following other special lines of treatment, *e.g.*, the Potassium iodide or Gelatin treatment.

Potassium Iodide Treatment.—The high reputation of Potassium iodide in the treatment of aortic aneurysm is based largely upon the enthusiastic advocacy of Balfour, who has steadily studied the subject for a period of many years. It seems to have been equally successful whether the aneurysm is of syphilitic origin or otherwise. Its beneficial effects are due to the influence of the drug in reducing blood-pressure and exerting a nutritional change in the walls of the aneurysmal sac. The assumption that it cures or relieves by favoring clot formation is not warranted by facts. If Potassium iodide has any effect on blood coagulation, it is that of increasing its fluidity ; and, again, autopsies performed on aneurysmal patients who have been relieved by the treatment have failed to show any clot in the sacs. Inasmuch as a long course of Potassium iodide rather favors emaciation, it is not a wise plan to restrict diet to too great a degree. Balfour himself states positively that only very moderate restriction is ever neces-

* Friedenwald and Rührh, *Diet in Health and Disease*, p. 402.

sary. To aid the drug in lowering blood-pressure, it is advisable, for a few weeks at least, to keep the patient in bed.

Some care is necessary in administering the Potassium iodide, especially in the non-syphilitic cases. Continued administration of large doses ultimately leads to increased frequency of the heart's action, and this must exert a deleterious influence on the aneurysmal walls. Hence, the patient's average pulse-rate while in bed must be determined by observations taken at intervals for several days. Then the Iodide is to be administered, starting with doses of five grains three times daily, after meals and well diluted. This dose may be increased gradually day by day until fifteen to twenty grains are taken three times daily. During all this time the pulse must be carefully studied, and as soon as its frequency is increased, the dose should be diminished to one which will permit the normal rate to be resumed. This is the dose which should be continued to the end of the treatment. As a rule, it will be found to be fifteen grains three times daily.

The effect of the Iodide treatment is to bring about prompt amelioration of pain and reduction in the size of the tumor, and prolongation of life. A "cure" takes place in a minority of cases only. The great advantage of this treatment is that it involves no danger to life. The most that can be said against it is the enforced inactivity of the patient for one to three months.

Ergotine Treatment.—Langenbeck* advocated hypodermatic injections of Ergotin, and claimed to have treated two cases successfully by this method. It was his custom to inject from one-half to three grains of Ergotine at intervals of three days. *A priori* from what we know of the action of Ergot on blood-pressure and unstriated muscular fibre, it would be supposed that it is useless in the treatment of aneurysm. Langenbeck's reputation as an accurate observer makes his experience worthy of respect, although others have failed to secure his good results.

Local Treatment.—Forchheimer advises, in addition to the Potassium iodide and diet regulation, the external application of cold by means of the ice-bag or the Leiter coil. He claims that it has a most beneficial influence over the heart's action, and produces a most striking relief of the symptoms. The applications should be maintained for several hours at a time, after which they should be removed for a like period.

The Gelatin Treatment was first proposed by Lancereaux. It has had numerous advocates and opponents. The opposition to it rests upon the liability to tetanus infection, 10 per cent. of the specimens of commercial gelatin containing the germs of that disease, and the exceedingly painful character of the injections. The first objection may be overcome by using a certainly sterile preparation; the second one is insurmountable. From 100 to 150 cc. of a one to two and a half per cent. solution of gelatin

* *Berliner klinische Wochenschr.*, March, 1869.

in normal salt solution are injected into the subcutaneous tissue of the back, buttocks or abdomen every five or six days. Lancereaux* and his assistants have now made 1200 injections without producing tetanus or suppuration. Absorption of the gelatin takes place within twenty-four hours. The aneurysm is found to shrink after ten injections, and to become consolidated after thirty to forty. Huchard believes that the gelatin solution should never exceed 1 per cent. strength. Authorities in this country have not viewed the gelatin treatment with favor.

Surgical Treatment.—McEwen's† needling operation appears to me to be the one which offers the best results with a minimum of danger. He has tried it in four cases, curing two of them. The operation consists in passing a fine needle under antiseptic precautions into the aneurysmal sac, and by scratching the opposite wall induce coagulation. A modification of this plan consists in leaving the needle *in situ* for twenty-four hours, during which time the pulsations of the blood-current cause the point of the needle to roughen the aneurysmal walls.

The various methods of "wiring" are not to be commended. They may be tried in cases in which hope from all other treatment has been abandoned, and it is evident that the patient has not long to live. The percentage of successes in the reported cases has been very small indeed.

Galvano-puncture has given better results than the "wiring" treatments; but it, too, must be regarded as dangerous. It should never be attempted excepting by an experienced surgeon in co-operation with an electro-therapeutist.

Symptomatic Treatment.—When pain, dyspnoea and other symptoms become severe, there is but little for us to do but keep the patient comfortable with *Morphia*. Digitalis and other heart tonics are inadmissible.

Lachesis, *Lycopodium*, *Baryta carb.*, *Baryta mur.*, and *Calcarea fluorica* have had their advocates. The lesion, being essentially surgical in its treatment, is not likely to be amenable to medicinal means.

Phlebitis.

The great danger incident to phlebitis lies in the formation and dislodgment of a clot, pulmonary embolism in particular being feared. What we call "cure" takes place by organization of the thrombus in the affected vein. Our efforts then must be directed to the prevention of the detachment of the original thrombus, while nature effects the balance of the cure.

The important item in the treatment is general *and* local rest. The patient must be confined to bed. The affected extremity, usually a leg, should be slightly elevated. It may be maintained in this position by means of supporting pillows, an inclined plane, or a trough well lined with cotton

* *Revue de Chirurgie*, 1906, No. 8.

† *British Medical Journal*, 1890, vol. ii, pp. 1107 and 1164.

wool. This treatment must be maintained for a long time ; indeed, it is generally regarded that a patient with phlebitis cannot be permitted to lie on his side with safety until six weeks have elapsed.

The affected parts should be kept well enveloped in flannels, or, when pain is present, hot fomentations may be applied. All examinations and changes of dressings should be made with the greatest possible gentleness, for such manipulations have not infrequently been followed by pulmonary embolism. Should embolism of the pulmonary artery take place, the only remedy for the emergency is *Liquor Ammoniae fortior*, which should be given in doses of five minims very freely diluted, and at frequent intervals. Its beneficial action is said to be two-fold. In the first place, it stimulates the heart, and, secondly, by diminishing the coagulability of the blood, lessens the tendency to thrombosis. In some cases artificial respiration should be instituted ; but care should be observed that the necessary movements are limited to the arms and thorax, while the phlebotic limb is kept in a fixed position.

The variations in the treatment necessitated by the case of phlebitis are for the most part medicinal, and relate to the antagonism of such constitutional conditions as gout, rheumatism, chlorosis, septicæmia, syphilis, influenza, and malaria.

Evidences of suppuration in any portion of the body call for prompt evacuation of the pus.

The remedies useful in phlebitis include *Arnica*, *Pulsatilla*, *Mercurius*, *Hepar*, *Rhus tox.*, *Apis*, *Baptisia*, *Veratrum viride*, *Hamamelis*, and *Lachesis*.

Varicose Veins.

While the clinical manifestations of varicose veins are purely local, much may be accomplished by attention to the general health, the therapeutic measures indicated varying according to the individuality of the patient. In this way we improve the nutrition of the veins.

Next, we must adopt precautions that will favor the return circulation and lessen the strain upon the affected vessels. Garters or other articles of wearing apparel capable of constricting the limb, even to the slightest degree, must be discarded. When the patient happens to be at rest, he should elevate his extremities to a certain degree, *i. e.*, have his feet at a higher level than his hips.

Compression of the extremities affords great relief to all the symptoms. This may be accomplished by elastic stockings, rubber or flannel bandages. The elastic stocking possesses the advantage of ease of application, but is open to the objection of expense, for the best of them lose their elasticity after two or three months' use. It should always be applied over a white lisle-thread stocking.

Rubber bandages may be substituted for the stocking, but must always be applied over some cotton fabric.

The best and cheapest application is made from ordinary white flannel strips, about three inches in width, and cut on the bias. A number of these strips may be sewed together end to end, to make a bandage of the proper length. They have the advantage of cheapness or durability, for they may be washed and ironed as often as soiled. They should be applied the first thing in the morning, with a degree of firmness that gives to the patient a sense of support without any uncomfortable constriction.

CHAPTER XVII.

DISEASES OF THE KIDNEYS.

Acute Nephritis.

THE first element in the treatment of acute nephritis is the enforcement of absolute rest in bed. This, of course, is not questioned in the cases that are moderately severe, when constitutional symptoms make the indications for such a course plain. It is equally important in the mild cases, and should be continued until the urine has become free of albumen. In many cases, however, the continuance of a period of absolute rest beyond a period of five or six weeks becomes impracticable, because of the depressing effect it has on the patient's spirits. Under such circumstances, it is advisable to permit the patient to get up for a certain number of hours each day, or even to indulge in a little exertion. At the same time, it is necessary to watch the effect of such liberties on the albuminuria. Very few physicians realize how long the albuminuria of acute nephritis may continue. I have seen cases in which one year elapsed before it disappeared permanently. It is not an infrequent experience to note that the albuminuria disappears within a comparatively short time, if the patient be confined to bed; but that it is liable to return when he gets up and around, and is especially well-marked towards the ends of such days during which he has been practically active. This is a very practical point, the neglect of which may result in the making of a chronic and therefore incurable nephritis. The physician must make it a rule to institute urinary examinations after days of unusual exertion for several months after the patient's supposed recovery. If albuminuria is discovered, the patient must be forced to maintain a certain amount of rest each day.

Necessarily, tact is required in enforcing the above directions, as it is easy to get patients to worry over their kidneys.

The patient's bed-room should be warm. Above everything he must be protected against cool drafts. The maintenance of the function of the skin is important. To this end, he should be covered with blankets of suitable weight, and should wear cotton flannel undergarments next to his skin. By these precautions, a mild degree of sweating, which plays an important part in the treatment of all cases, may be maintained.

The best diet for the case of acute nephritis is milk. In recent medical literature, one finds numerous articles which seem to condemn this advice. The objections raised by them are almost entirely academic; they are cer-

tainly not practical in view of the many years of experience during which milk has been regarded with universal favor. It is said that the quantity of milk required to preserve nutrition is so large that its administration must bring great strain on the kidneys. Again it is pointed out that milk is a nitrogenous food. Actual experience demonstrates with this as with other acute diseases which are not of an exhausting character, the preservation of nutrition is a comparatively unimportant problem. Patients can go very well on a limited amount of food; in fact, they are all the better for being poorly fed. It is only necessary therefore to give the patient a sufficient quantity of milk to appease the appetite; the preservation of normal nutritive activity is entirely out of the question. Milk is mainly of value in that its nitrogenous constituent is less irritating to the kidneys than any other food; and its water serves to flush the kidneys and aid the elimination of excrementitious matters. The maximum quantity administered daily should not exceed three to four pints. It is best given in quantities of eight ounces and at comparatively short intervals.

If plain milk disagrees, as it occasionally may, it should be given diluted with vichy or other carbonated water, or buttermilk may be substituted. The recommendation that salt be added to it is not to be countenanced (*vide infra*).

In exceptionally severe cases with urine scanty or suppressed arrow-root gruel in small quantities is the best possible food. Other articles of diet permissible in acute nephritis include flour and oatmeal gruels, koumyss, and barley water. The administration of beef extracts and broths is to be regarded as of very doubtful value. I feel that we should never prescribe them unless all other foods are impossible.

When convalescence starts in, the diet list may be enlarged. The best foods then are bread and butter, greens, grapes, oranges, and other fruits. Meats are not to be advised until recovery has become well-advanced.

Of recent discoveries in the therapeutics of renal diseases, there are none as important as the strict limitation of the amount of chlorides taken. Indeed, there are those who contend that the great value of a milk diet lies in the freedom of that nutriment from sodium chloride. Salt restriction is especially indicated when dropsy supervenes. It is an excellent plan to eliminate practically all salt from the food until recovery is practically complete.

The patient should be permitted to partake freely of water. Objection has been made to this direction on the theory that the free drinking of water may throw more work on the kidneys than they can perform; hence, any existing dropsy is aggravated. This objection may be practical when water is given in excessive quantities. It certainly does not obtain when the water is administered within the bounds of reason. Certainly, there is no better diuretic in acute nephritis than water.

As a special measure for allaying thirst, the so-called imperial drink may be prescribed. This is prepared by dissolving one drachm of Cream of Tartar in one pint of boiling water. The juice of a half a lemon and a little sugar are next added. The mixture is taken when cold; the above-mentioned quantity in divided doses in the course of the twenty-four hours.

Hydriatric measures are of great value in aiding the action of the kidneys, especially when suppression of urine threatens or exists. Those which have given the best results are the hot bath and the wet-pack; the former in adults, the latter in children.

To administer the hot bath, the patient is placed in a tub of water at a temperature of 100° F. for from fifteen to twenty minutes. He is then quickly dried and wrapped thoroughly and placed between blankets. Both the hot bath and the wet-pack excite moderately profuse sweating, which is rarely, if ever, exhausting.

Valuable as is the sweating process in acute nephritis, it should never be carried to excess, as it may result in a relative increase, *e. g.*, undue concentration, of the excrementitious matters in the blood.

Local treatment other than the constant application of an extra thickness of flannel over the kidneys is, as a rule, unnecessary. If suppression of urine supervenes, or the quantity of urine becomes dangerously low, it is sometimes a good plan to apply dry or wet cups over the kidneys. The latter are never admissible in cases of children.

The bowels should receive regular attention. In the ordinary run of cases it is sufficient to secure daily movements by enemata. If these do not act satisfactorily, or if the urine becomes very scanty and dropsy appears, it is nearly always advisable, if not absolutely necessary, to administer a saline purge or a hydrogogue cathartic. Of the former, Magnesium sulphate given in strong solution the first thing in the morning is the best. Of the latter preparations, we may administer compound powder of Jalap or Elaterium.

When uræmia threatens or develops, attention to the bowels is imperative. I am a firm believer in the value of colonic injections of large quantities of normal salt solution. From one to two pints should be injected at a time. Notwithstanding the academic objections urged against this practice, experience teaches that it is probably the most efficient means at our disposal for exciting the kidneys to action. In the case of children, these high injections must be administered with tact and skill, as parents are far from a reasonable frame of mind in the presence of an impending death. The best advice to physician and nurse at such times is to work steadily without fuss and say little. This begets the confidence of the family, and restores the organization of the sick-room.

While thus advising the colon douche, I am not unmindful of the deleterious, if not, indeed, serious effects resulting from the use of too large

quantities of water repeated with unnecessary frequency. Indeed, I have seen comparatively healthy kidneys rendered well-nigh functionless by such ill-advised enthusiasm. If two quarts of normal salt solution do not secure *some* result it is useless to persist.

Remedies.—*Aconite*.—*Aconite* is hardly a remedy for a fully-developed acute nephritis. Its utility is rather limited to the stage which may be called one of active congestion. Necessarily, the diagnosis does not enter into the prescription, for it is indicated by the characteristic symptoms of fever, restlessness, bounding pulse, anxiety, and diminished secretion of urine.

Cantharis and *Terebinthina*, on the other hand, are indicated in the fully-developed disease. Indeed, they are used as specifics by many of our physicians, to say nothing of numerous old-school authorities. We as a school have made the mistake of ignoring *Cantharis* in cases which do not present the bladder symptoms produced by that remedy. Practical experience has demonstrated that it is of value in those cases which have followed scarlatina. Physicians differ considerably in their recommendations as to dosage. While the majority prefer the lower potencies, there are many who advocate drop doses of the tinctures given every three to eight hours. *Cantharis* is also homœopathic to the uræmic state when the patient is stuporous or delirious.

Terebinthina may be differentiated from *Cantharis* in that it is better adapted to cases arising from exposure to cold, and in which the urine presents a smoky or cloudy appearance due to the presence of blood. Though not an indication, dropsy is no barrier to its administration. As a rule, when œdema is prominent, some other remedy is more efficient.

Veratrum viride is a remedy for the initial stage, and is indicated by the general symptoms, which include high temperature, thin, small pulse, vomiting, and cerebral symptoms. It is the principal remedy in those cases in which convulsions appear early, *i. e.*, with the initial clinical phenomena.

When dropsy asserts itself, the most useful remedies are *Apis mellifica* and *Apocynum cannabinum*. *Apis* is indicated when the œdema is especially well-marked about the face, and is attended by stinging sensations or pains, entire absence of thirst, dyspnœa, and a torpid mental condition. Usually these symptoms are of rapid development.

Apocynum cannabinum is an excellent though uncertain remedy. Its uncertainty lies in the fact that all preparations are not equally reliable, and that in many instances efficient doses are impossible because of the gastric irritability they excite. The initial dose should be two drops of the tincture every three hours, which may be increased to as much as five drops, unless nausea and vomiting contra-indicate. There is no remedy capable of producing as marked renal activity as *Apocynum*.

Arsenicum album should be administered in the later stages of the dis-

ease. The patient is improving, but does not gain as rapidly as one would wish. So prolonged are the symptoms, that one fears the nephritis will merge into the chronic variety. *Mercurius corrosivus* is likewise indicated under these circumstances. Arsenic differs from the latter remedy, however, in the presence of severe constitutional and local phenomena, as debility, waxy complexion, dyspnœa, weak heart, restlessness, anxiety, and gastric irritability. *Mercurius corrosivus* presents anæmia, shortness of breath, a high degree of albuminuria, and diarrhœa with colic or tenesmus.

Rhus toxicodendron is indicated in cases produced by exposure to cold, more especially when combined with dampness. Its special symptomatic features are pain in the back associated with general soreness or aching.

Glonoïn is to be used in acute nephritis when the vascular pressure is high, and only then. The dose should be one minim of the first centesimal dilution three to four times daily at first. Later, the drug may be given at shorter intervals.

For the vomiting of nephritis, the best remedies are tincture of *Iodine*, *Creosote*, and *Carbolic acid*. The dose of these medicines should be one minim, well diluted, every two hours.

Throughout the illness, attention should be paid to the heart. As a rule, the interests of this organ will be best served if only those measures which relieve it of strain are instituted. Exceptionally, it is necessary to administer medicines having a direct influence on the heart, those deserving special mention being *Digitalis*, *Caffeine*, and *Adonis*.

When uræmia supervenes active measures for the relief of symptoms and the elimination of the poison must be instituted. For the convulsions it is sometimes necessary to administer *Chloroform*. Good results may also be obtained by rectal injections of *Potassium bromide* and *Chloral hydrate*. Sometimes the convulsive manifestations may be prevented by remedies directed against the premonitory nervous symptoms. Those which have given the best results are *Agaricine*, *Ammonium valerianate*, *Hyoscyamus*, *Stramonium*, *Jaborandi*, *Cicuta*, and *Belladonna*. For the uræmic coma, *Carbolic acid* and *Opium* are the main remedies. For active uræmic symptoms, *Cuprum arsenicosum* 2x, as advocated by Goodno, has probably given the most general satisfaction.

During the continuance of the uræmic state every measure looking to the re-establishment of the urinary flow and elimination by the skin should be adopted. These include the hot-air bath, the hot wet-pack, copious colonic injections, and active purgation.

For œdema of the lungs, the remedies are *Atropia*, *Antimonium tart.*, *Arsenicum*, and *Phosphorus*.

For complicating serous membrane inflammations, *Bryonia*, *Cantharis*, *Scillitin*, and *Mercurius corrosivus*.

An English physician has reported some excellent results in acute

uræmia from lumbar puncture. He argued that the symptoms were dependent not upon the toxæmia but upon a subarachnoid effusion.

Chronic Diffuse Nephritis.

The serious outlook of patients with chronic diffuse nephritis must be considered in formulating a plan of treatment for their relief or cure. The general trend of reliable medical authorities favors an unfavorable prognosis, the majority of cases terminating fatally within a period ranging from eighteen months to one year and a half. Nevertheless, it is acknowledged by all that occasional cases are observed in which a practical cure is obtained, or the onward progress of the disease is checked, and the patient follows a comfortable though invalid existence for many years. Such favorable results are, of course, obtainable only when the case comes under treatment within three to six months from its inception. Inasmuch as the disease is very treacherous in its mode of onset, and its discovery is almost always the result of accident, one can never be certain of the stage which the pathological process has reached at the time of coming under treatment.

Assuming that the case is a curable one, and we should always do this in the absence of symptoms pointing to a contrary conclusion, we should adopt strict though practical measures for their cure. These measures may be epitomized as a proper balance of rest and exercise, protection of the skin, regulation of the diet, attention to elimination and the administration of medicines. In the enforcement of these various provisions one can never be empirical, but must individualize his cases and adapt his advice according to the peculiarities of the case in hand. To understand the functioning ability of the kidneys, it is essential to make repeated examinations of the urine, special attention being paid to the daily quantity of urine and the total solids excreted. The quantity of albumen and the number and nature of tube-casts are of minor importance, excepting comparisons are made from time to time and the influence of the various agencies above mentioned carefully noted. The presence of dropsy, retinitis, albuminuria, diminished and diminishing quantity of urine, persistent insomnia and severe headache are to be regarded as of unfavorable omen.

Cases that are seen early should be ordered to bed for an extended period, which should be enforced as long as the urinary findings improve, or until it is found that such rest is having a deleterious influence on the patient's nervous condition. If the confinement induces anæmia, it is a good plan to arrange the method of resting the patient so that he gets an abundance of fresh air.

When improvement ceases or indications change, the patient should be directed to get out of bed for a certain period each day. As far as possible, this time should be spent in the open air. The amount of exercise

permitted must be in keeping with his general strength and the influence of the exertion on the urinary excretion.

Attention to the skin includes bathing and hydrotherapy, clothing and climate. Before the stage of dropsy appears, and while the urinary excretion is still good, the best hydiatric measure is the warm bath, which should be administered daily and for a period ranging from ten minutes to half an hour. Following the bath the patient should be placed at rest, and comfortably though warmly wrapped. The temperature of the bath should be started at about 100° F. With succeeding seances it should be gradually increased until 105° F., or the limit of comfortable tolerance is reached. The object of this bath is to excite gentle action of the skin. Profuse sweating must be avoided. This treatment nearly always has a most favorable influence on urinary excretion.

The hot wet-pack and the hot-air bath should be reserved for the advanced stages of the disease, when dropsy is present and urinary excretion is scanty.

The underclothing of the patient should always be of woolen, and its weight should be graded to the weather. If the patient's circumstances will permit, and there is a reasonable chance of effecting a cure or greatly prolonging life, it is a good plan to order a change, during the cold months, of residence to a place where the climate will be warm and equable. If, on the other hand, circumstances force him to remain at home he must be supervised carefully. His room should be kept at a temperature of from 72° to 75° F. His days for going out-of-doors must be selected, and he must always be suitably clothed, *i. e.*, so that he shall not be driven into a profuse perspiration on the one hand or chilled on the other.

No set diet list can be formulated for patients with chronic diffuse nephritis. Very recent cases are probably best treated as is the acute affection, *i. e.*, by absolute or comparative rest, and a strict milk diet for a period of two or three weeks. If the case progresses favorably its continuance for a longer period must devolve upon the physician's judgment. When dealing with patients who have probably suffered for a considerable time we have to consider the fact that the illness is probably incurable, and that we have as our object the slowing of the progress of the disease, and the maintenance of as high a degree of general health as is possible. Knowing the bad influence of the chlorides on renal disease in general, it is most important that the patient be limited as much as possible in the supply of salt in his food. The number of articles of food to be interdicted should be as few as possible. Alcoholic beverages of all kinds must be forbidden. Meats may be permitted once daily in the majority of cases. If the patient does not thrive as expected it is a good plan to forbid meats altogether. It is doubtful if the red meats are any more injurious in their effects than are the white ones. Easily digested fats, as butter and cream, are usually bene-

ficial. There seem to be no reliable reasons for forbidding any of the vegetable foods. There are many clinicians who are opposed to the above-described liberal diet; but the number who recognize that by it renal action is better, and the patient's strength is preserved, is rapidly growing in number. A much greater danger than the restrictions as to foods permitted is found in improper preparation of food, rapid eating, and overloading of the stomach. All of these tend to indigestion, which in turn produces intestinal decomposition, with its toxins. The absorption of the latter more than almost anything else throws undue strain on the kidneys.

In the terminal stage of chronic nephritis the diet should be regulated according to existing conditions and symptoms. As a rule, milk and milk foods will be found to be very acceptable, and should constitute a large proportion of the nourishment. At the same time, it must be remembered that it is scarcely possible to give the patient a sufficient quantity of these nutriment to meet the demands of nutrition. The advocacy of skimmed milk does not seem reasonable to me, because the loss of the cream takes from the patient an easily digested and highly nourishing food.

There are high authorities, as Mitchell* and Tyson, who are strong advocates of the milk diet in advanced cases, and their views are entitled to respect because of their vast experience. They claim that the milk diet has not found favor because of faulty technique in its enforcement. The former advises that the skimmed milk be taken slowly and at first in small quantities. Gradually the quantity is increased until, during the second week, the patient is taking two quarts daily. "If, after having attained this quantity or more, the patient gets worse, diminish the amount to the quantity used the first week and increase more slowly." After four or five weeks of milk diet the quantity should be reduced and a small piece of steak or a chop substituted. Mitchell furthermore formulates the following notes governing the administration of milk.

"1. Exclusive milk diet must be abandoned when it causes too great polyuria, when symptoms of anæmia and exhaustion are noticed, and when the albumen is but small in amount. In such cases allow vegetables and farinaceous foods, as oatmeal, cracked wheat, granula, wheatena, and, if the patient still loses strength, a small amount of broiled or roasted meat once daily at early dinner.

"2. Milk which has been violently shaken is said to be better tolerated than that which is not.

"3. When the stomach is very irritable an ounce of iced milk may be given every half-hour.

"4. When milk is not tolerated peptonizing it sometimes results in toleration.

"5. In some cases malted milk is better borne than milk alone.

* *Diseases of the Urinary Organs*, p. 176.

"6. Koumyss, matzoon, or buttermilk may be substituted partly or wholly for the sweet milk, if the latter is not well taken.

"7. The writer (Mitchell) seldom finds patients who are unable to take milk when it is mixed with French Vichy water, beginning with one-third milk to two-thirds Vichy, and progressing to two-thirds milk and one-third Vichy.

"8. In one desperate case the milk was made palatable by flavoring with vanilla extract and adding sugar. The patient took this with eagerness . . . and finally recovered.

"9. When the patient has improved, arrowroot and rice, together with cereal foods, fat, bacon, zwiebach, butter, mutton broth, chicken broth, clam broth, and oyster broth may be allowed.

"10. In some cases, clam broth alone has been taken as a diet to the exclusion of milk, when the latter was not tolerated or failed to nourish."

Much has been said in favor of special mineral waters in the treatment of chronic nephritis. As already stated in another section of this volume, their value depends, not upon their mineral ingredients, but upon the purity of the water and the quantity consumed. Of the well-known waters in the United States, the Poland, Waukesha and Bethesda are the most widely used, and are known to give good results.

Remedies.—The medicines mostly used in chronic diffuse nephritis are, with few exceptions, the same as those already recommended for the acute disorder, *Cantharis* and *Mercurius corrosivus* in particular having given the best results in the early stages. *Cantharis* is now used by both schools of medicine, the old-school physicians claiming that it acts as a stimulant. The best results are obtained from small though material doses, *i. e.*, one to two drops of a reliable tincture every three to six hours. It is particularly efficient for an intercurrent hæmaturia. It is highly recommended by Hare in chronic parenchymatous nephritis produced by excessive indulgence in alcohol. Special symptomatic indications for *Cantharis* include scanty and highly albuminous urine, painful and difficult urination, dropsy, gastric irritability, delirium, coma, drawing, tearing pains in the region of the kidneys and thirst.

Mercurius corrosivus was first highly advocated as a remedy by the late Dr. Millard. It is indicated by about the same line of symptoms calling for *Cantharis*, but has much less influence over the dropsy than has that remedy. Ordinarily, the third decimal trituration every two to three hours is the best preparation; but in syphilitic cases, to which it is particularly adapted, the dose should be the second decimal, which may be administered as often as every two hours.

Various preparations of Iron have been highly praised. Some physicians go to the extreme of making it their routine remedy. It is unquestionably the best remedy with which to combat the anæmia. It may be given

as Ferrum redactum, Ferrum iodatum, Ferrum muriaticum, or Basham's mixture. Inasmuch as Arsenic is also an excellent remedy in chronic nephritis it may be given combined with that drug (Ferrum redactum, gr. j; Arsenious acid, gr. $\frac{1}{60}$).

Kali chloratum is capable of producing all the lesions and symptoms of chronic nephritis. Notwithstanding this, it has not been much used in the treatment of that disease. It is suited to the albuminuria, hæmaturia, the anæmia, and breathlessness which are so commonly observed. It should be given in from the first to the third decimal triturations.

Phosphoric acid is indicated by excessive emaciation and loss of strength.

Potassium iodide is the most important remedy in cases occurring in syphilitic subjects. There should be no hesitation in giving material doses. Good results are not to be expected from less than ten grains three times daily in syphilitic subjects. In non-syphilitic patients smaller doses give better results. When it disagrees with the patient's stomach, *Iodopin* hypodermatically may be prescribed.

Aurum mur., though commonly recommended in syphilitic cases, is far inferior to Potassium iodide. It is especially indicated when parenchymatous nephritis is associated with or engrafted upon the interstitial variety. Increased vascular pressure and arterio-sclerosis are important indications.

Arsenicum album and *Arsenicum iod.* are important remedies for the advanced stages of the disease, *i. e.*, when dropsy is prominent and there is effusion of serum into the various serous cavities. Symptomatically, the patient presents restlessness, thirst, anxiety, dyspnœa, with nocturnal aggravations.

Other remedies which may be considered and studied are *Apis mellifica*, *Nitric acid*, *Phosphorus*, *Digitalis*, *Helonias*, *Hellebore*, *Cuprum*, *Stramonium*, *Podophyllum*, *Leptrandra*, and *Nux vomica*.

Strontium lactate has been recommended as having a specific influence in reducing the albuminuria. Testimony concerning it is not unanimous by any manner of means.

Of the various symptoms which may attend chronic diffuse nephritis some may become so prominent as to demand special measures for their relief. The treatment of dropsy will be considered in another section of this work.

The dyspnœa is usually controlled by the therapeutic measures which aid the patient's general condition. It is due to high vascular pressure or to uræmia, or to both. Glonoin, Sodium nitrite, and Amyl nitrite may be prescribed when it is dependent upon the increased arterial tension. When due to uræmia, eliminative measures are necessary. In the terminal stages, all treatment is unavailing excepting Morphia. To this drug many objections have been urged, because of the possibility of the Morphia

diminishing urinary excretion. This objection has some foundation in fact ; hence, the drug should not be prescribed until all other resources fail. An experience that is not small has taught me that the evil effects of Morphia on the excretory functions of the kidneys are overrated, providing it be administered with discretion. Hypodermic injections of one-eighth of a grain are usually sufficient, and need not be repeated oftener than twice in the twenty-four hours. With prolonged use the dose must, of necessity, be increased.

Morphia must also be considered as a palliative of two other important terminal symptoms, namely, the insomnia and the vomiting. In the few cases of obstinate insomnia—reference is here made to terminal insomnia only—that have come under my care all of the ordinary hypnotic drugs, both homœopathic and physiological, have failed, and Morphia has been the only one to be relied upon.

Morphia, unfortunately, does not relieve the vomiting with any certainty. In about half the cases it stays it for a time at least. In the remainder it is absolutely useless, or may even aggravate the condition. For a further consideration of the relief of this symptom the reader is referred to the section on the treatment of gastric symptoms.

Uræmia is so intimately associated with all diseases of the kidneys that a consideration of its treatment will be had in special paragraphs devoted to it exclusively.

Surgical Treatment.—From a limited experience, I am lead to advise Edebohl's operation in the treatment of chronic diffuse nephritis. It should not be looked upon as a specific method of treatment, to be employed in all cases ; but should be restricted to such as fail to respond to the medical and hygienic measures above outlined. Again, it should not be deferred until dropsy, retinitis, and other symptoms point to an early death. Still, if I were to speak from personal observation I would advise its trial even in terminal cases, since in one patient with retinitis albuminurica and constant agonizing headaches, vision was restored and the headaches ceased. In another case with profound dropsy the patient was much improved, though the repetition of the operation on the second kidney was regarded as dangerous and so refused. It can hardly be regarded as a proper treatment for interstitial nephritis, in which the cardiac-vascular changes are too widespread to make the chances of cure any better than remote.

Edebohls himself is, as to be expected, very enthusiastic as to the results of his operation. He reports that of 51 cases 7 patients died within seventeen days after operation ; 7 between two months and eight years ; 2 were unimproved ; 22 underwent satisfactory improvement ; 9 cured at periods ranging from thirty-three months to ten years after operation ; 1 had a relapse ; and 3 were not traced.

Guiteras has analyzed 120 cases, of which 16 per cent. were cured ;

40 per cent. improved; 11 per cent. unimproved; and 33 per cent. died. He formulates the following conclusions: (1) In chronic nephritis operation should not be performed until medical treatment has proved of no avail. (2) The best time for the operation is when the process advances rapidly and danger of overtaxing the heart exists. (3) The best results, accompanied by the least danger, are obtained in combination with unilateral nephropexy. (4) The most unfavorable results follow in diffuse nephritis. (5) When anasarca and a bad heart are present the operation should not be done. When the heart is good the operation may give the patients a few extra months, provided they survive it. (6) When marked destructive processes, due to nephritis, exist in the kidneys, relief may be obtained for a number of weeks, but in these patients the kidneys generally give out again, and death takes place when the new capsule contracts.

Chronic Interstitial Nephritis.

While the main factors in the treatment of chronic interstitial nephritis are identical with those of the diffuse variety, nevertheless the underlying conditions are so different that we are obliged to make very important departures from the details outlined in the preceding section. Chronic interstitial nephritis is remarkable for its long and latent course, the many years of comfort possible for its victims, the remarkable prevalence of the disease among persons who have passed the age of fifty years, and the many and diverse symptoms it may produce when it has advanced to the stage at which it is capable of producing obtrusive disturbance of the bodily functions. But three other diseases vie with it in the diversities in health of which it is capable, these three being hysteria, syphilis, and tuberculosis.

So many years may the disease continue before producing disability, and so common is it in men of middle age, that its existence may be regarded as no great misfortune, and this I say despite its known incurability. Osler has even put a happier phase on the situation, when he remarked that the man who at middle life discovered that his urine contained traces of albumen and a few casts should regard himself as a fortunate individual, for by such a discovery he is warned that he must prepare himself for a less strenuous life than heretofore, and with this change of habits his chances for a long and comfortable existence are increased.

As with chronic diffuse nephritis, the patient's interests demand that consideration be paid to the functions of the skin, rest, diet, elimination, climate and medication. In this disease, however, the usual duration of life after its discovery is seldom more than eighteen months. Interstitial nephritis, on the other hand, has an indefinite duration. Cases have been known to live twenty years and longer in comfort. We have then forced on us the importance of judgment in formulating a plan of life. We occupy as the

patient's adviser a position in which we stand between two evils, that of inculcating neglect on the one hand and making the patient morbidly careful on the other. The first error leads to unnecessary progress of the pathological lesions; the second to a condition of introspection and nerve wear and tear which are scarcely less pernicious. The thoughtlessly scientific mind is too apt to pay attention to the disease while not considering the patient. He who gives his patient the more consideration will secure the best results.

It is in the earlier stages of chronic interstitial nephritis that our rules of conduct differ in details from those laid down for diffuse nephritis. Rest is of importance; but that rest should be relative. The patient should limit his working hours, as would any sensible individual at his time of life. Let him have set hours for business, beyond which he will not permit himself to work. Let him adopt some hobby for his recreation hours, one as far removed from his daily avocation as possible. If he is sedentary, such recreation should be moderately athletic; if his work is physical, his hobby should be physically restful. In every case it must be congenial, and must take his mind from his daily labors.

His mind must be set at ease respecting the nature of his illness. He must not hear the, to him, terrible diagnosis of "Bright's disease." Rather should he be made to understand that he has a condition which may be not inaptly called a renal inadequacy, for that is what it amounts to practically.

Next to rest and care of the nervous system comes the question of diet. The most important injunction here is the positive abandonment of alcoholic beverages of all kinds. Of course, we must admit to ourselves that an occasional drink does no harm, but these patients are only too apt, if we give them any lee-way in this respect, to indulge themselves regularly. Total abstinence is therefore a good policy.

The feeding problem is a very different one from that of diffuse nephritis. In both diseases, it is true, we endeavor to formulate a diet that shall throw as little work on the kidneys as possible. Hence, in theory at least, we should forbid all nitrogenous foods. To follow this plan in interstitial nephritis is far from practical. By so doing we keep the patient on a restricted diet for many years, and with almost unerring certainty undermine his strength and vitality. In other words, the treatment is more serious than the disease. If, on the other hand, we advise a diet which shall consist of a variety of nourishing and readily assimilable foods, such, indeed, as constitute the average dietary of people at large, but without excesses in any one direction, the patient is almost certain to thrive. Over-eating and special excesses constitute the chief dangers in the nephritic. It is now generally accepted as a fact that the chief danger in interstitial nephritis lies in the formation of toxins in the intestines and their absorp-

tion. The latter in its turn exerts a deleterious influence on the kidneys as upon other organs. The golden rules for the dieting of interstitial nephritis then are as follows: 1. Permit the patient to partake of a nourishing mixed diet without excess in any special direction. 2. Prohibit all alcoholic beverages. 3. Insist upon having food properly prepared. 4. Food must be slowly eaten and at regular hours. 5. Free drinking of pure water is important as an eliminant. 6. Coffee and other beverages which happen to exert a deleterious influence on the patient's nervous system must be forbidden. They may, of course, be permitted, when it is noted that they exert no unpleasant effects.

When patients can thrive on a vegetable diet, as many do, I would not hesitate to recommend his persistence in the same over many years. I have one patient who has been treated in this way over a period of twelve years, and still leads a useful existence.

In the advanced stages of interstitial nephritis, when the patient is partially or wholly disabled, the feeding problem is identical in every way with that of diffuse nephritis. Nitrogenous food must be limited, and in certain cases it may prove necessary to put the patient on an exclusive milk diet.

Smoking is to be permitted according to the indications in each case. When there is cardiac irritability it must be forbidden entirely. In all cases it should be restricted to moderation. With the majority of patients it is a good means of securing a peaceful state of mind for at least part of the day. Whenever tobacco is found to produce nervous disturbances it must be forbidden *in toto*, no matter how strong may be the craving for it.

The care of the skin involves attention to clothing, bathing, and climate. The nephritic patient is very liable to pulmonary affections, which are apt to pursue a latent course, and are more serious in their results than in the healthy subject. Patients should therefore pay special attention to their clothing, wearing woolen or silken garments next to the skin, and adapting the weight of the same to atmospheric conditions. Bathing should be practiced for purposes of cleanliness. Unless the cutaneous glands are kept clear it is impossible for the skin to perform its functions as an organ of elimination. Bathing with the idea of producing excessive or energetic sweating is to be condemned. When the patient's financial condition will permit, an occasional sojourn in a place having a dry and equable climate will serve the double purpose of protection from weather conditions and rest from business cares.

Medicinal Treatment.—But little can be said respecting specific medication of chronic interstitial nephritis, for the remedies must be prescribed according to symptomatic indications. These are necessarily so varied that there is scarcely a remedy which may not prove to be of some use at some stage of the illness. For example, the therapeutics of arteriosclerosis, cardiac hypertrophy, and gastro-intestinal disorders is intimately

associated with that of contracted kidney. Increased vascular pressure, which is so common an attendant of the disease, is of itself a danger, which may bring in its wake numerous complications, notably visceral hæmorrhages. It is to be met by the same remedies we would prescribe in cases of arterio-sclerosis, namely, *Glonoïn* and *Aurum mur.* The latter drug certainly has a specific therapeutic relationship to interstitial nephritis. Although its action is undoubtedly homœopathic, it was first brought into prominence by Bartholow. All of the special symptoms of the disease are found in its pathogenesis, and it has an important action on overgrowth of connective tissue. It should be given in five minim doses of the second decimal dilution three times daily.

Kali hydriodicum likewise is an important remedy for the disease *per se*; but physicians have exhibited a morbid fear of using it in efficient doses. It is very efficient in reducing the arterial tension, and exerts considerable influence in maintaining renal and general nutrition. The claim that it is of use in syphilitic cases only is probably without foundation. Some physicians prefer Sodium iodide as being less likely to disturb the stomach. When the case is of possible syphilitic origin, larger doses should be prescribed. Ordinarily, five to ten grains, three times daily, constitute the proper dose.

Besides *Glonoïn* and the Iodides for reducing vascular pressure, we may resort to Amyl nitrite, Sodium nitrite, and Erythrol tetranitrate.

The dyspnœa is usually dependent upon increased vascular pressure or approaching uræmia, and usually yields to remedies directed against these conditions. *Arsenicum album* and *Arsenicum iod.* are often efficient in relieving respiratory difficulties. In one case in which the vascular pressure was inordinately low *Suprarenal extract* brought very prompt relief.

Aconite is so closely identified in the minds of physicians with acute illness that it is neglected in chronic diseases. It is of special value in interstitial nephritis. It is very efficient in relieving the symptoms of cerebral congestion. Given in two or three drop doses of the tincture, four times daily, it is the best remedy for the associated vertigo.

Mercurius corrosivus is indicated in syphilitic cases. It may be prescribed in cases in which diffuse nephritis complicates the interstitial variety. It is indicated in the later stages of the disease, and is one of the few remedies useful in albuminuric retinitis.

Plumbum of all remedies presents the closest homœopathic relationship to interstitial nephritis, as pointed out by Hughes. It has been but little used, however.

As to the special symptoms, as epistaxis, headache, uræmia, etc., the reader is referred to the various sections dealing with the treatment of these affections.

Throughout the treatment of a patient with interstitial nephritis the

physician must not be too aggressive in his therapeutics and his clinical investigations. Too frequent urinary examinations, constant medication, and unnecessarily stringent hygienic directions wear on the patient's nerves and lead to neurotic complications, which could have otherwise been avoided.

Nephrolithiasis.

The treatment of nephrolithiasis or renal calculus may be studied under the following headings :

1. The treatment of renal colic.
2. Prophylactic treatment.
3. Medicinal treatment.
4. Surgical treatment.

1. **Treatment of Renal Colic.**—This condition is usually the first one to direct attention to the possibility of the presence of a renal calculus. The suffering is generally so extreme as to demand energetic and efficient measures for its relief. These include local treatment and the administration of internal medicines. The patient necessarily is obliged to take to his bed, where he should remain until all soreness has positively disappeared. The best local application is a hot-water bag or a hot poultice to the painful area. It is important also that the bowels be thoroughly moved, as this is said to favor the progress of the stone along the ureter to the bladder. A general hot bath not only acts to relieve pain but serves as a relaxing agent.

To relieve the pain with certainty there is but one drug, namely, Morphia. This should be given hypodermically in doses of one-fourth of a grain, which may be repeated as often as every four hours. In severe cases it is more than possible that it will not kill the pain completely. Nevertheless, the physician should not push the drug to complete relief, because the suffering or cause of pain is a sufficient antidote to the poisonous action of Morphia. If it should so happen that the calculus escapes into the bladder, and the pain is therefore completely relieved while the patient is still under the full effects of Morphia in large doses, it is easy to see that serious toxic symptoms may develop suddenly. This fact has led some physicians to prefer Chloroform inhalations as a wiser analgesic agent.

Of all the remedies for renal colic none is as serviceable as *Belladonna* or its alkaloid, *Atropia*. I much prefer the latter. It may be given in conjunction with Morphia or independently. As a rule, it is best given in doses of $\frac{1}{200}$ of a grain three times daily. Larger doses are often more efficient than the above, but if repetition is required are liable to produce unpleasant physiological symptoms.

Other remedies than *Belladonna* may be called for in the treatment of renal colic. Especially prominent are *Berberis*, *Argentum nitricum*, *Cantharis*, *Lycodium*, *Paricra brava*, *Nitric acid*, *Nux vomica*, and *Tabacum*.

Argentum nitricum is indicated when the prominent symptom is soreness in the back; the urine burns when passing, and the urethra feels as if swollen; the urine is dark and contains blood, renal epithelium, and uric acid deposits.

Berberis.—The pains are of a shooting character; the patient bends over toward the affected side in order to take the tension from that locality. There are sharp, darting pains following the course of the ureter and extending into the thighs. The urinary deposit consists of mucus, epithelium, and urates.

Cantharis acts by lessening the local irritability, so that the passage of the calculus is easier and less painful.

Lycopodium is indicated in uric acid calculus, when the right side is affected.

With the subsidence of the attack the urine should be watched carefully for some days to discover if the calculus has been passed into the bladder and escaped thence by way of the urethra. If it is not discovered, then the bladder should be carefully sounded, or a small tube (No. 25 size) introduced, and the bladder thoroughly washed by a Bigelow irrigator. If no stone is recovered, it is safe to assume that it is still in the kidney or ureter. If in the latter, it is almost certain to continue to give rise to some trouble, which must lead to a correct diagnosis without any difficulty. If it remains in the kidneys it may produce no symptoms for a time, though more commonly its continued presence is liable to excite a pyuria and hæmaturia. Owing to the damage to the kidneys producible by calculus, it is a wise plan to have an X-ray examination made at an early stage of the illness. The positive information thus obtained must surely lead to a greater accuracy of treatment.

Whether the calculus be discharged or retained, it is advisable that measures be instituted to place the urinary excretion in a healthy state so that additional calculi will not form, or that those already existing shall not grow larger. The idea of administering drugs capable of dissolving the calculus is too ridiculous to give it serious consideration.

2. **Prophylactic Treatment.**—Therapeutic measures belonging to this class are really applicable only to cases in which a stone has been discharged, and there is every reason to believe that the urinary passages have been entirely cleared. They must be carried out with intelligence. Under the best of circumstances, some months are required to tide the patient over his predisposition. While the physician must be definite and positive in his instructions, he can very readily overdo the matter. For example, as to the question of diet. It is recognized that calculi are very frequently mixed in their chemical composition. One cannot, therefore, frame a diet list designed to counteract a uratic, oxalic, or phosphatic concretion as the conditions present may indicate. The sensible course is to prescribe a diet

list and give general directions with the idea of placing the digestive apparatus in as good condition as possible. In restricting foods, we must be careful that we do not go to an extreme, and undermine nutrition and strength by a semi-starvation diet. Certain foods, which are notoriously bad, and which do not enter into the dietary of the majority of individuals, by which I mean those rich in nuclein, can well be abandoned. In this list are included sweetbreads, thymus, liver, kidneys, etc. For several months succeeding the attack of colic, it is wise, when there is reason to believe that we are dealing with a uric acid calculus, to forbid heavy meats, excepting in great moderation. After the lapse of this time the patient may be more generously fed. Patients suspected of having oxalate or phosphatic calculi should be treated according to the directions laid down in the sections on Oxaluria and Phosphaturia respectively.

Bad habits of living, as rapid eating, gormandizing, alcoholic indulgence, sedentary existence, and a life within doors must be corrected.

The free drinking of a pure spring water is important. Those which are especially recommended include Poland, Londonderry, Buffalo, Waukesha and Saratoga Vichy waters. The daily amount of these to be consumed should amount to from three to four pints.

The beneficent action of lithia in renal calculus is a debatable subject. So far as the lithia spring waters are concerned, it is doubtful if they contain sufficient of the drug to be of much use as solvents. This has led to the recommendation that the patient be instructed to take seven grains of one of the salts of lithia three times daily.

To promote solution of gravel, or for rounding off the rough surfaces of urinary concretions, it has been recommended that the urine be kept in a condition of alkalinity or acidity according to the composition of the calculus. Thus, in the case of uric acid calculus, it is customary with some physicians to administer four or five doses of Bicarbonate of soda or Potassium daily. These drugs keep the urine feebly alkaline. Various salts of lithium, as the carbonate, citrate and benzoate are also favorite remedies. These not only render the urine alkaline, but they also combine with uric acid to form the soluble lithium urate. The daily dose of these drugs is forty grains. *Piperazin* has of late years been a very popular remedy for uric acid deposits. It is given in doses up to forty-five grains daily. Other uric acid solvents include Urasol (Acetyl-methylene di-salicylic acid) five to ten grains three times daily; Diurazin (Acetyl-methylene di-salicylate of theobromin) twenty grains daily, Lacetol, and Sidonal. The latter is a combination of Piperazin with Quinic acid. The Quinic acid was found by Weiss to be capable of stopping the formation of uric acid in the system. The dose is thirty-five grains twice daily administered in solution.

Besides the remedies mentioned in the treatment of renal colic, the following additional therapeutic suggestions may be offered:

Arsenicum.—Uric acid diathesis. Passage from time to time of gravel, with dull pain in the renal region extending down the ureter; gastralgia; tickling and itching in urethra; difficult micturition; sediment of uric acid. Urine alkaline, dark yellow, with sediment of mucus.

Berberis vulg.—Urine dark red, yellow, becoming turbid; copious mucous sediment, mixed with a whitish grey and later a reddish mealy sediment; greenish urine depositing mucus; blood-red urine, which soon becomes turbid and deposits a thick mucus and bright-red mealy sediment, slowly becoming clear, but retaining its blood-red color; motion brings on and increases the urinary troubles.

Benzoic acid.—Urine of a repulsive odor, of a changeable color, brownish, cloudy and alkaline; dark reddish brown, of high specific gravity, with an acid reaction; granular phosphatic deposits in the urine.

Calcareo carb.—Offensive dark-brown urine, with whitish sediment; urine soon becomes turbid and deposits a whitish, flaky sediment.

Sarsaparilla.—Frequent and copious discharge of pale urine, which becomes turbid on standing, like clay water; sandy sediment of different colors.

Arnica.—Piercing pains, as if a knife were plunged into the region of the kidneys; violent tensemus of the bladder; chilly and inclined to vomit.

Belladonna.—Spasmodic, crampy pain extending along the ureter through which the calculus makes its way.

Nux vomica.—Always the best remedy after the palliative use of anodynes; pain especially in the right kidney, extending into genitals and the right leg; nausea, vomiting; constant urging to urinate; insufficient urging to stool; inability to lie on the right side, better while lying on the back; rising and walking about increase the pain; persons of sedentary habit, given to high living, and too often of an irritable, choleric, impatient nature.

Opium.—Pressive, squeezing pains, as though something had to force its way through a narrow space; shooting pains from different places into the bladder and testicles; vomiting of slime and bile; obstinate constipation; dysuria; greatest anxiety and restlessness; constant changing disposition; face hot; pulse slow.

Tabacum.—Constant deadly sickness of the stomach and retching, with cold perspiration; violent colicky pains in the region of the ureter, right or left side.

Surgical Treatment.—The indications for surgical treatment are so well epitomized by Morris that I quote him *verbatim*.

"1. That the aim should be to extend the application of nephrolithotomy and ureterotomy, and thereby restrict the necessity for nephrotomy and nephrectomy.

"2. That more frequently than not an exploratory operation, whereby

no calculus is discovered, is not really a 'negative' exploration, because so many curable morbid conditions which mimic renal calculus are discoverable only by an exposure of the kidney.

"3. That the theory that a stone in one kidney, whether that kidney is itself painful or not, reflects or transmits pain to the opposite kidney, is quite unproven; that it is a dangerous theory, calculated to lead to very erroneous practice; and that the surgical principle with regard to exploratory operations should be that with pain, paroxysmal or continuous, on one side only, the kidney on the painful side should be explored.

"4. That nephrectomy for calculous conditions is very rarely called for, and should be done only in most exceptional cases. Nephrectomy for calculous pyo-nephrosis is the proper operation—at any rate, as a primary operation—because of the frequency of double calculous disease. My experience has shown me that kidneys from which stones weighing 830 grs. and 1300 grains have been removed may be sufficient to maintain life during the blocking or suspended action of the opposite organ.

"5. That nephrectomy of a greatly disorganized kidney, whilst the opposite organ is occupied with calculus, is almost certainly followed by death; whereas, nephrectomy, after the opposite kidney has been freed from stone, and allowed some time to recover, will probably be followed by recovery from the operation, and possibly by very good health subsequently.

"6. That when renal calculus causes reflected or transferred vesical or ovarian pain, the removal of the calculus will be followed by complete cure of the bladder or ovarian symptoms.

"7. That in some cases, renal calculus conditions are attended by very remarkable symptoms, sometimes with, sometimes without high temperature, and that information as to the cause of these symptoms is needed.

"8. That in man unsuspected renal calculus is a source of very real danger; and when its presence is disclosed, whether by accident or by the systematic examination of the urine, we should recommend its immediate removal, regardless of the fact that it is not causing pain, unless the condition of the patient contra-indicates an operation.

"9. That quiescent calculus is as dangerous as unsuspected calculus, and ought to be removed by operation.

"10. That the hitherto accepted teaching that a renal calculus if causing mild symptoms extending over a lengthened period, or attacks of severe colic of only recent occurrence, should be treated on the expectant plan, ought for the most part to be discarded as unsound in theory and dangerous in practice.

"11. That the same principle should be applied to renal calculus which has long been the rule as to vesical calculus, namely, when suspected, it should be searched for, when known to exist, removed, without waiting in the hope that it may become encysted or spontaneously expelled.

"12. That the very low mortality of nephrolithotomy puts this operation on the same footing for renal calculus as lithotripsy in the most experienced hands for vesical calculus."

Pyelitis; Pyelo-Nephritis.

Etiological factors must be borne in mind in the treatment and especially in the prophylaxis of pyelitis. In the presence of obstructive lesions of the lower urinary tract, as urethral stricture and enlarged prostate, this is an easy matter if all instrumentation is performed under strict antiseptic precautions. Patients suffering from myelitis, locomotor ataxia, general paresis, and other diseases not infrequently attended by urinary retention, must, when that symptom develops, be subjected to particular precautions, because catheterization must be frequently repeated, and the urinary organs are especially predisposed to infection. It is difficult to say how the pyelitis sequential to the infectious diseases can be prevented, excepting by careful observation of the urine, and the institution of proper curative measures as soon as the first evidence of pyuria is manifested. Tuberculous pyelitis is probably impossible of prevention. It occurs for the most part in individuals who have had tuberculous lesions which have healed. Consequently they are no longer under skilled observation.

With the development of the acute disease, it is of the highest importance that the patient be commanded to go to bed. In the majority of cases, he feels sufficiently ill to yield this point; but there still remains a number of cases in which slight urinary discomfort and a moderate pyuria constitute the whole symptomatology, and these do not appeal to the patient as signs of disability.

If obstruction exists, it must be treated wherever situated. As stated above, urethral strictures must be incised or dilated; enlarged prostate must receive attention, and presents a more serious problem. It is usually the best plan to drain the bladder suprapubically. When the patient's local and general condition has improved, the removal of the prostate is in order.

If there is an associated cystitis, the bladder must be irrigated daily with suitable solutions (*vide* section on treatment of cystitis).

If there is good reason for believing that calculus is the cause of the lesion, operation is imperative. To delay it means that the surgeon must deal with a still more serious condition when consent for an operation is finally given.

If pain is a prominent feature it is best treated by the application of dry heat to the loins, though poultices and dry cupping have been recommended by some authorities. The application of poultices appears to me irrational, as they make the tissues groggy and place them in a condition favorable to infection, should operation become imperative.

When the excretion of urine is not markedly excessive, the patient

should be instructed to drink freely of a pure spring water, of which Poland and Waukesha waters are probably the best. In chronic cases some discretion must be exercised in advising excessive water drinking, as it may prove harmful when the kidneys are extensively diseased.

In the acute cases milk is the best article of diet. In those running a chronic course the patient should have a light though nourishing diet, which may consist of milk, chicken, fish, farinaceous foods and well-cooked vegetables. Alcoholic drinks of all kinds must be positively interdicted.

When it has been determined that the pyelitis is of calculous origin, it is absurd to temporize by the administration of drugs supposed to exert a solvent effect on the calculi. Clinical proof that successful results can follow such treatment is entirely wanting. From the pathologist's standpoint the entire scheme is illusory.

The administration of remedies which are excreted in the urine as formalin solution is of great benefit in many cases. Hence it is that *Urotropin* or *Hexamethylenediamin*, in doses ranging from twenty to thirty grains daily, is strongly advised and oftentimes brings good results.

Methylene blue is sometimes successful when *Urotropin* fails. Three grains of the crude drug should be given in capsule once daily. Should it produce dysuria, as is frequently does in male subjects, this undesirable result may be prevented by the administration of grated nutmeg in combination with it.

When it is evident that the patient is losing ground, and there are no underlying incurable diseases, no time should be lost in considering the propriety of an exploratory nephrotomy. Indeed, pyelitis should be regarded from the first as one of those diseases in which the physician will do well to associate with him a surgeon who, though bold, must be conservative. Subsequent treatment must be guided by the findings at the operation.

In tuberculous cases, nephrectomy is the wisest procedure when the patient's constitutional condition is good and the remaining kidney is sound. By means of this operation it is proposed to prevent the extension of the tuberculous process to the ureter, bladder and remaining kidney.

Remedies.—These include *Aconite*, *Belladonna*, *Bryonia*, *Cantharis*, *Cannabis sativa*, *Chimaphila*, *Rhus tox.*, *Uva ursi*, *Buchu*, *Hydrastis*, *Mercury*, *Parcira brava*, *Cinchona*, *Chininum arsenicosum*, *Boric acid*, *Arsenicum*, *Benzoic acid*, *Lithium carb.*, *Sarsaparilla*, *Stigmata maidis*, *Berberis vulgaris*, *Lycopodium*, and *Sulphur*.

Pyonephrosis.

Pyonephrosis being a pyelonephritis plus ureteral obstruction, its treatment must be closely identified with that of the latter affection. Unlike pyelonephritis, we cannot adopt tentative measures because of the lack of outlet for the purulent formation. Surgical intervention is essential, and

should take place as soon as the diagnosis has been made. The initial operative procedure should be exploratory incision for evacuation of the pus. The offending kidney should be thoroughly examined to determine the cause of the suppuration and the obstruction, and the operator should not rest satisfied until he has drained every focus of suppuration. If it is discovered that the organ is extensively diseased or disorganized, and it has been determined that the opposite kidney is capable of performing good excretory work, then the wisest plan is to proceed with a nephrectomy. The physician and surgeon in these cases should work together in obtaining all possible data prior to operation, because prompt action and good judgment are required at the initial operation. Primary nephrectomy presents a much lower mortality than an operation postponed to a subsequent period, probably because the patient in the meantime had been permitted to go beyond the realm of surgical salvation. Whenever the incision discloses the fact that there is considerable of good kidney tissue remaining, the surgeon should be satisfied with incision and free drainage.

Extra-renal or extra-ureteral causes for the retention should always be searched for. These include displacements of pelvic organs and tumors. These cases are the exception, however, for most cases are dependent upon calculus. It is impossible to see how any remedies can be of value as long as the pus is retained. *Terebinthina* has been recommended as having a specific action on renal inflammation. The various urinary antiseptics, as *Boric acid*, *Urotropin*, etc., appear to be irrational to the writer when there is no outlet for the secretions of the diseased kidney. The constitutional remedies for chronic suppuration, as *Hepar*, *Mercurius*, *Silicea*, *Sulphur*, and *Calcarca carb.*, furnish a list of remedies from which the selection should be made.

Hydronephrosis.

Hydronephrosis being due to obstruction of a ureter is, so far as the treatment is concerned, a surgical affection. The selection of an operation must be based upon the causative condition. As this can be diagnosed but seldom by ordinary methods of examination, it is a wise plan to make an exploratory incision before reaching a conclusion. The apparent innocence of the tumor may encourage the patient to defer treatment. This position should be severely discountenanced, because the gradually increasing distention causes atrophy of the renal structure, the kidney itself being eventually converted into a mere sac. The policy of waiting until symptoms appear is dangerous.

The operations that have been proposed include tapping, incision, nephrectomy, and others which are suggested by the pathological condition found at the exploration. Tapping is never more than a palliative procedure, for the fluid soon reaccumulates. It is, moreover, not attended by danger, for notwithstanding the greatest care as to antiseptic infection of

the renal wound may take place. The procedure is an unscientific one, as it throws no light whatever on the nature and situation of the lesion, and only postpones for a more unfavorable time the radical procedure which should be performed at once.

Nephrotomy, or incision of the kidney, offers scarcely any greater danger than aspiration, and is thoroughly rational. It sometimes, though rarely, effects a radical cure. By means of it the operator is often enabled to determine the nature and situation of the obstruction and remove it. For example, a calculus may be found lodged in the ureter; or the mucous membrane at the mouth of the ureter may be distorted, so as to act like a valve; ureteral strictures may be dilated or the tube resected. The principal objection that has been urged against nephrotomy is the production of a permanent renal fistula. This objection has but little value, by reason of the great chance it affords of saving and prolonging life.

If it is evident after exploration that the kidney has been so far destroyed as to render it functionless, it is good practice to excise it, providing the remaining kidney is in good condition.

When a hydronephrosis has been produced by a twisted ureter and floating kidney, fixation of the organ is usually sufficient to effect a cure.

Perinephritis and Perirenal Abscess.

The possibility of a primary perinephritis may well be questioned, for it is hardly conceivable that such a disease can occur without a local infection. Authorities, however, admit the existence of cases arising from exposure. Those which follow one of the general infections, as tuberculosis and the exanthemata, can hardly be called primary. At the onset, it is well to proceed as if we expected to have the inflammation resolve itself without suppuration. To this end, we should apply dry cups to the region of the kidneys and follow by hot applications. The diet must be of the liquid character usually adopted in the treatment of febrile affections. Notwithstanding the above advice, we must expect suppuration to take place, because that is the usual result. Hence, if pain does not ameliorate, the fever continues, and the tenderness and swelling persist, we must prepare the case for incision. It is by no means advisable to wait for fluctuation. The character of the fever, the local redness and œdema, and the increasing hardness and tenderness, are sufficient warrant for surgical intervention, especially as all competent authorities recognize the impossibility of recognizing fluctuation until the lesion has advanced to extensive destruction of the perirenal structures. The incision must be undertaken with the idea of making a thorough exploration to determine the primary local cause, if such exists. Finding pus, the cavity must be thoroughly drained, and treated on the general principles governing the management of abscess cavities. If no pus is found the surgeon may congratulate himself that he has acted

wisely, for the local depletion produced by the incision is of itself a good thing, bringing with it great relief of suffering. It also may happen that if the incision is kept open for a few days pus eventually escapes.

To many physicians the advice given may seem radical, in that it inculcates surgical operation on but few data. Osler once remarked very truly that the physician wanted too many data to establish a diagnosis, and Bowditch, speaking on this very point, said: "If ever there be occasions for a cautious boldness on the part of the surgeon, these abscesses present them." Many and many a fatality results solely from "a procrastinating or timid handling of deep-seated suppuration."

Another factor of treatment to be borne in mind is the wisdom of preventing the operation wound from closing too early. Literally, they must be drained until the healing from the bottom of the wound actually forces out the drainage material.

The post-operative treatment is that adapted to other extensive suppurating lesions, nutritious and easily digestible food, *Cinchona* ⁰ in ten to fifteen drop doses, four times daily, and judiciously supervised rest and fresh air.

Malignant Tumors of the Kidneys.

All cases of malignant disease of the kidneys must result fatally sooner or later if treatment is not undertaken. The only treatment that offers any prospect of favorable result is removal of the tumor. To determine the advisability of operation, we should have accurate comparisons based upon the results of cases treated expectantly and by operation. It is known that in case of malignant growths of the kidneys in children, the fatal issue follows very shortly the clinical recognition of the disease. In case of adults, the average duration of life is about three years. Such a long life expectancy in the face of a disease surely progressive and fatal, is to be explained by the fact that the tumor in its early stages is well walled in; thus surrounding tissues are protected and general extension of the infection prevented. Exceptional cases have been reported in which life was prolonged six, eight, ten, and even seventeen years. Unfortunately, the facts at our disposal are insufficient from which to draw reliable conclusions covering the desired points.

In placing the duration of life following operation, we should for comparative purposes add the period of the patient's existence intervening between the time of probable or known onset of the tumor and the date of death; we must also have accurate statistics covering a large number of cases from which to base the average mortality of operation; and we must know the number and frequency of recurrences, and the periods after operations at which they took place. Many other facts should be at our disposal, but unfortunately owing to the failure on the part of surgeons to appreciate the value of the additional statistics, we must remain in ignorance of them for the present. But more of this presently.

Recurrences are known to be very frequent, especially during the first six months, and when the tumors are large and adherent. In exceptional instances, they have been postponed to periods as long as ten years. Heresco's investigations have placed the following figures at our disposal. Out of 112 adult cases, 89 survived the operation. Of these subsequent information was obtained concerning 62; 36 of these were alive and well at periods ranging from two months to seven years; 22 died of recurrences in from three months to three and a half years; 4 died of intercurrent disease without any return of the malignancy in from six weeks to four and a half years.

The statistics above presented certainly fail to make out a good case for operation; and yet one knows from his study of pathology and the clinical history of cancer in general, that surgical intervention should be of great value, and this should be demonstrable by the study of extended clinical reports. We are not justified in placing a statistical value upon operated cases when such cases were entirely unsuited to operation. Each case should be carefully studied and recorded. We should apply to the treatment of malignant diseases of the kidneys the same simple facts we utilize in similar tumors of the mammary glands. To quote Morris,* we must determine if possible the following questions either before or after exploratory incision: "Are the neighboring lymphatic glands too widely invaded to be completely removed? Are there secondary growths in any other organ or tissue? Has the tumor any important adhesions, or has it infiltrated irremovable structures; In short, can the whole of the disease be removed, and is the patient's strength and general state of health sufficiently good to permit of the operation being well borne? If these questions can be satisfactorily answered, nephrectomy ought to be performed at as early a date as possible." We believe that at present, answers to these questions are of more importance than the study of statistics based upon cases that have not been accurately recorded. There is every reason to believe that if malignant disease of the kidneys is diagnosed early and treated promptly, the results should be as good as that following the removal of any other visceral cancers. Owing to the seriousness of the situation, it is justifiable in doubtful cases to advise and practice exploratory incision, with the understanding that should indications warrant, the tumor shall be extirpated.

In the case of malignant disease in children, the known greater rapidity of progress of the lesion justifies more radical and prompt action than in the case of adults.

The treatment of malignant diseases other than the surgical must be based upon symptomatic indications. The remedies and palliative drugs

* *Surgical Diseases of the Kidneys*, vol. i, p. 606.

are the same as those indicated in the treatment of malignant growths generally.

Hydatid Disease of the Kidneys.

The treatment of hydatid disease of the kidneys is strictly surgical. Morris announces that continued experience has not caused him to depart from the advice first given him in 1884 as follows: "The only proper treatment is to cut down upon the tumor, and having tapped and emptied it of its fluid contents, to incise it and stitch the edges of the cyst to the margins of the parietal wound. The cysts should be opened from the loin if possible; if not, then at its most prominent and projecting point. Aspiration may be tried before incision, but is less surely successful."

Nephrectomy has been performed in a few cases, but the results have been so uniformly bad as to suggest its complete abandonment. Really, such a radical procedure may well be regarded as irrational, because in hydatid disease it is very exceptional indeed for the secreting structures to be so badly damaged that they cannot recover their function as soon as the cyst is emptied and drained.

When suppuration has taken place, or when the cyst has ruptured into the peritoneum or lung, we have an entirely different situation. Here nephrectomy is necessary.

In some few cases it is possible to remove the cyst by careful dissection.

Cystic Degeneration of the Kidneys.

Cystic degeneration of the kidneys does not offer much of a field for the therapist, whether he be a physician or a surgeon. The most that the physician can do is to guard the functions of the kidneys as he would were the case one of chronic Bright's disease. Surgical treatment, looking at from whatever point we may, offers practically nothing, because the lesion so commonly invades both organs. When the disease is unilateral, nephrectomy or other operation is unnecessary, because the remaining kidney is abundantly able to perform the necessary excretion. The only exception to this statement is in those exceptional instances in which the cyst is so large that it acts mechanically to cause pain or disturb the functions of other viscera. Even after such operation has been successfully performed, there is no assurance that the remaining kidney will not take on cystic changes.

Uræmia.

Throughout the management of a case of kidney disease, whether it be acute or chronic, the physician ever holds in mind the possibility and probability of uræmia developing. Indeed, it may be well said, that many of his therapeutic measures have been directed immediately against this undesirable condition. This being the case, it is a natural sequence that the

pathological lesions or the patient's vitality or both are such that treatment is unavailing. When then, uræmia does develop, we cannot rid ourselves of the conclusion that the case is well-nigh hopeless, for it has gotten into a serious condition despite good hygiene and well-selected medicines.

Uræmia having developed, we are furthermore handicapped by the deficiency of our knowledge concerning the mechanism of the condition which we are pleased to designate by this name. It is true that in the majority of the cases, we find a deficient excretion of urine which is low in its urea percentage. But many times—very many, indeed—we meet with cases in which the urinary flow is still good in quantity, and its urea percentage is not as low as we find in many other patients who are apparently in the possession of fairly good health. It seems that we know but one fact with any degree of positiveness, and that is that the majority of cases of uræmia are really examples of a toxæmia dependent upon the presence of a poison, the nature and action of which we know practically nothing. The disease being toxic, our therapeutics efforts must be directed first against the condition which has permitted the intoxication to take place; and, secondly, the antagonism of the poison by physiological and chemical remedies; and, thirdly, the elimination of the poison.

Treatment directed to the producing lesion—in most cases an acute or chronic nephritis—is likely to be useless, because we have permitted the case to progress to an almost hopeless condition at a time when conditions were far more favorable for results than they have now become. Naturally, we do not abandon our efforts, nor need we do so, as measures of this class are not contra-indicated by existing conditions.

In the antagonism of the poison by physiological and chemical remedies, we are also unfortunate. We can, to a limited extent, administer drugs which antagonize special symptoms, but such treatment is more comforting to the onlookers than beneficial to the patient. As to chemical antidotes, we have none; how can we have in our utter ignorance of the nature of the poison?

Elimination remains almost our only standby. Even in this field we are almost powerless, because the most important organs for the purpose—the kidneys—are usually so altered structurally as to have passed beyond control. True, in some few cases, the organic lesion is temporary only in whole or in part, but still we are laboring under the disadvantage of forcing work on disabled organs. Elimination can be accomplished to a certain extent by the skin and the bowels, and there is evidence to the effect that it does accomplish something.

Finally, even though we succeed in bridging the uræmic patient over his present danger, we know that we are still dealing in the chronic cases with an incurable disease, in the contest with which, no matter how long the race, death is invariably the victor.

Such a long preamble as the above to introduce a practical subject seems entirely out of place. My apology I believe to rest upon a practical basis. I have seen many cases of uræmia treated, by many physicians and by many minds. I have seen many ingenious and unheard of remedies, logical and illogical applied, and I have often wondered if we have not in our mistaken kindness done more harm than good. Who knows? Let us hope that in dealing with impending or developed uræmia, we shall so conduct the treatment that we do no harm! Let us also resolve that in the face of an evil, the result of which is so frequently fatal, we shall give the patient such relief as we can according to our individual knowledge, and do it conscientiously! With many views diametrically opposed to each other, held by men of acknowledged probity and ability, no man can assume to himself the possession of the whole truth and nothing but the truth; while those who disagree with him are the incarnation of ignorance and dishonesty.

Treatment directed to the producing condition has been considered already when describing the management of the various renal diseases. It involves attention to the patient as an individual and to his disease. We have remedies which may be of some avail in some cases. Prominent among these is *Cuprum arsenite*, the use of which was first emphasized by Goodno. It should be given in the second or third decimal triturations every one to two hours. It is useful in only a small minority of the cases, but even this is saying much. Its use is the natural suggestion of the value of its chemical components, Arsenic and Copper, in renal disease.

McClelland,* in formulating the remedies for uræmic states, offers the following suggestions:

When occurring in connection with Bright's disease: Apis, Belladonna, Apocynum, Arsenicum, Benzoic acid, Cuprum ars., Hydrocyanic acid, Kali nitricum, Nicotinum, Phosphorus, Terebinthina, Uran. nitricum.

Acute attacks during pregnancy or scarlatina: Apis, Belladonna, Cantharides, Conium, Cuprum, Gelsemium, Glonoin, Lachesis, Stramonium, Veratrum viride.

With coma: Agaricus, Anacardium, Belladonna, Hyoscyamus, Opium.

With anæmia: Arsenicum, Camphor, China, Chininum ars., Phosphoric acid.

Of the physiological remedies, *i. e.*, those antagonizing or suppressing the symptoms, we have at our disposal Chloral hydrate, Chloroform, Potassium bromide, Morphia, Glonoin, Sparteine, and Digitalis.

Of these, Chloral, Potassium bromide, and Chloroform are generally

* Arndt's *System of Medicine*, vol. ii, p. 186.

recommended for the amelioration of the convulsions. Chloroform by inhalation is certainly efficient for a time, but its administration cannot be continued indefinitely, and it exerts no permanent influence over the pathological process. If, therefore, the convulsions continue, it should be abandoned. Chloral hydrate and Potassium bromide injected by the rectum are to be recommended in children, in whose cases it is especially important that the convulsions be promptly suppressed because of the danger of cerebral and other visceral hæmorrhages resulting from the associated increase of vascular pressure.

In adults, and also in many cases in children, *i.e.*, those in which Chloral and Bromide fail to control the spasms, Morphia is invaluable. Concerning this remedy there has been much discussion. American clinicians led by Loomis are loud in its praises, despite the reputation of the drug in locking up the excretions, and thus lessening elimination. While I have always given Morphia in uræmic states with misgiving, I must confess that I have never observed the baneful effects claimed for it by Geo. Johnson and other English authorities. In many instances, it is absolutely the only efficient palliative we have, not only for the convulsions but for other nervous phenomena.

The so-called renal asthma has been alleged to be uræmic. When it is truly such it will yield to eliminative measures. More frequently, it is dependent upon changes in vascular pressure, and yields to *Glonoïn* or *Suprarenal extract*, as the blood-pressure is high or low. When these fail to bring prompt relief, we must resort to Morphia.

Eliminative treatment should be directed mainly to the skin and the bowels. To secure activity of the former, the best remedy is the hot-air bath. When this fails to produce the desired action, *Pilocarpine* may be used hypodermically in doses ranging from $\frac{1}{12}$ to $\frac{1}{2}$ grain. Within a few minutes after its administration, there ensues a profuse sweating, and with accumulation of bronchial mucus. It is the latter condition which has caused so many clinicians to fear its use. It certainly is not a competent remedy when there is evidence of approaching pulmonary œdema. The simultaneous administration of Strychnia or alcohol in the form of brandy or whisky will aid in expectoration.

For elimination by the bowels, we have three purgative remedies, namely, *Elaterium*, *Croton oil*, and *Castor oil*. The former of these is the most commonly used. Objection has been urged to it because of the prostration which sometimes follows. The proper dose is one-eighth of a grain in the form of a freshly-made pill. It produces very profuse, watery stools. *Croton oil* is less reliable in its effects, though of value. It should be given in a single dose of two minims combined with a few drops of Olive oil. If the patient is conscious, it should be administered in capsule. *Castor oil* does not enjoy an extended popularity. It is highly advocated

by Smitz, and is endorsed by Hale. The dosage impresses those who have not used it in this connection as rather heroic, *i. e.*, one-half ounce every two hours.

The most efficient means of acting on the kidneys is by hypodermoclysis and high enemata of saline solutions.

The above results of the treatment of uræmia represents the views of standard authorities. I cannot close without reference to dissenting views. Croftan,* of Chicago, after making an analytic study of uræmia concludes that this condition has for its basis not the presence of urea in the blood, but the forerunners of that substance. He denies that it is due to inability of the kidneys to excrete urea, and believes that the fault lies with the liver. He believes that we should relegate the renal idea to the background, and should first rest the liver by judicious starvation, then gently stimulate it by salicylates, bile acids and small doses of Calomel, and by such hygienic and dietetic measures as we know will stimulate hepatic functions. He believes that the most sensible treatment of the uræmic attack is blood-letting, followed by the injection of a normal saline solution, which can at least do no harm, using such agents as will stimulate the liver, such as Salicylates dissolved in normal salt solution or solution of Sodium citrate or Phosphate in appropriate molecular concentration. Under such treatment he has seen the alarming symptoms of uræmia disappear.

The use of lumbar puncture should also be considered, for there are undoubted cases in which the prominent symptoms all have appeared to be due to subarachnoid effusion, and several clinicians have reported favorable results from its use.

Hæmaturia.

Hæmorrhage from the urinary organs is, not unnaturally, the occasion for great alarm on the part of its victim. The first duty of the physician, therefore, is to quiet the patient's apprehensions, as this will serve greatly to control the organization of the sick-room, as well as to drive away the patient's mental suffering. In pursuing this course, the physician can act safely and conscientiously, for it is only in hæmorrhage arising from papilloma of the bladder and traumatism—both of them surgical diseases—that the symptom is at all liable to cause death, while in some instances it is to be regarded as a conservative complication, which will result in benefiting the primary pathological condition.

In any case, therefore, the physician should act conservatively and confidently until he has clearly-defined indications justifying him to call in a surgeon and proceed radically. In most cases, indeed, it is the wiser plan for the physician to associate with him a surgeon, as but in few instances of hæmaturia is the lesion one of purely medical aspects.

* *Journal of the American Medical Association*, January 6, 1906.

The conditions in which the bleeding may be said to be beneficial rather than otherwise include carcinoma of the bladder, passive congestion of the kidneys and enlarged prostate. It has been a matter of observation that the pain in cancer of the bladder is not infrequently ameliorated with the escape of blood and returns when the bleeding ceases. Of course, the long-continued hæmorrhage endangers life to a certain extent. It therefore becomes a matter of nice judgment as to how far the physician is willing that the hæmorrhage shall proceed. He has no moral right to shorten his patient's life by wilful determination to neglect a serious symptom that the patient may die earlier and so end his suffering. On the other hand, in view of the relief obtained by the local depletion, the physician is justified in taking chances; but he must watch his patient intelligently.

In the case of passive renal congestion, as from heart disease, no one will question the conservative value of the bleeding. In enlarged prostate, the bleeding is dependent upon ruptured atheromatous vessels. The hæmorrhage lessens the local blood-pressure, thereby reducing the swelling.

With the first signs of hæmaturia, however slight they may be, the patient must be ordered to bed, and there he must remain until the bleeding has ceased entirely for six or seven days. This measure alone will control the majority of cases. When the hæmorrhage is from the bladder or prostate, the elevation of the pelvis is of positive value.

How far applications of cold to the region believed to be the seat of hæmorrhage will aid is uncertain. They certainly do good to the extent of satisfying the patient that something is being done for him. The applications may be made in the form of ice-bags or Leiter's coil. In the case of vesical or prostatic hæmorrhage, small lumps of ice may be inserted into the rectum, after their sharp corners have been rounded off by a short dip in hot water.

The diet should be liquid and non-stimulating. Alcoholic beverages are not to be permitted unless indicated by the excessive prostration. Water or lumps of ice may be administered in moderation to allay thirst.

Care must be taken not to force food when the stomach is irritable, as the frequent efforts at vomiting and retching must interfere seriously with healing as well as with any clot formation. If the vomiting persists despite treatment, it is a wise plan not to take any chances, but to order nutrient enemata.

Just as energetic emesis interferes with repair, so will energetic purgation act. In severe cases, therefore, the bowels should be kept quiet, but without attempts at inducing constipation. If, after a few days, an accumulation of fæces takes place, it is best removed by an ordinary enema.

It sometimes happens in severe cases that large clots of blood accumulate in the bladder. If the bladder is not able to rid itself of these within a short time, *i. e.*, within a few hours, they should be washed out gently

through a catheter. Following the irrigation of the bladder, several ounces of a 1 per cent. solution of carbolic acid may be injected into the organ. This slightly coagulates the bladder epithelium, and prevents absorption of septic material.

Medication.—The leading remedy for hæmaturia is *Terebinthina*. It is especially efficient when the symptom results from renal disease, and that whether it arises from blood changes, renal inflammation, or exposure to cold and damp. It is indicated by urine of a brownish or blackish color; burning, drawing pains in the region of the kidneys; urging and pressure in the bladder; cutting pains from the bladder to the kidneys or upwards towards the umbilicus; weakness, prostration, and nausea are frequent accompaniments. It is a favorite remedy among many old-school physicians.

Cantharides is suited to cases in which the hæmorrhage is active, and the bladder is inflamed. Nevertheless, it often proves useful in renal hæmaturia. The patient has a constant desire to urinate, but a few drops being passed at a time. There are violent pains in the back extending along the ureters to the bladder; restless, uneasy feeling, with tossing about at night. *Cantharides* is one of the important remedies for hæmaturia dependent upon calculus.

Aconite is indicated by the associated rather than by the local symptoms. The patient is chilly or has fever with restlessness. The pathological condition is one of active congestion. Locally, the patient complains of heat, soreness, and throbbing.

Arsenicum, *Phosphorus*, *Arsenicum hydrogenisatum*, and *Crotalus* are the principal remedies for hæmaturia resulting from blood changes, as in yellow fever, variola, and scurvy. *Arsenicum album* is indicated in debilitated and broken-down constitutions; the urine is decomposed and dark in color. Thirst and restlessness are prominent. Locally, the patient complains of strangury, with burning pains in the urinary tract and paralytic symptoms of the bladder.

Phosphorus is the principal remedy when hæmaturia persists because of deficient coagulability of the blood. It is also a remedy for general visceral degenerations, and when hæmaturia is associated with jaundice.

Arsenicum hydrogenisatum more than any other remedy is indicated in hæmaturia with general blood disorganization. There is general prostration; the patient is weak and languid on awaking; urine suppressed followed by vomiting; weak and very restless. Hæmorrhages from numerous portions of the body, especially from mucous membranes.

Crotalus horridus is the most important medicine in the hæmaturia of the acute infectious diseases, especially that accompanying yellow fever. Lachesis is also to be thought of in this connection.

Nux vomica is indicated purely on the etiological factor, namely, excessive indulgence in alcoholic drinks, or abuse of purgative drugs. It is,

therefore, a remedy in the hæmaturia occurring in the course of interstitial nephritis in alcoholic subjects.

Equisetum.—Vesical irritation, especially in women; the urine contains much mucus; bladder tender and sore.

Rhus aromatica is used in cases similar to those calling for *Equisetum*. To secure its best effects it must be given in material doses—*i. e.*, in fifteen drop doses of the fluid extract.

Hamamelis is to be used in hæmaturia dependent upon venous oozing. It is especially indicated in the condition which has not inaptly been termed hæmorrhoids of the bladder. It is much used as a local remedy, a distilled fluid extract diluted with an equal quantity of water is injected into the bladder once daily. Drachm doses of the fluid extract are also recommended internally.

Other remedies to be commended are *Uva ursi*, *Camphor*, *Cinchona*, *Erigeron*, *Millefolium*, *Veratrum viride*, *Geranium*, and *Thlaspi bursa pastoris*.

Various styptics have been highly recommended by old-school authorities, of which the iron preparations, tannic acid, and gallic acid are the most prominent. There seems to be but little general confidence in them when administered by the mouth, and they are generally condemned as local remedies.

Adrenalin hydrochlorate was used successfully by Chassaignac as a local remedy in vesical hæmaturia. After washing out the bladder with a boric acid solution, the organ was injected by a 1:2,000 solution of Adrenalin prepared by diluting the commercial 1:1,000 solution with normal salt solution.

In persistent hæmaturia dependent upon delayed coagulation, Calcium chloride in large doses—*i. e.*, fifteen grains three or four times daily may be used with good results.

Malignant Disease of the Kidney.—The hæmaturia from this cause is usually of the recurrent character, coming on after every slight exertion or jolting. As a rule, such a hæmaturia is found to be associated with an enlargement of the kidney. If the disease has not progressed too far, nephrectomy is the remedy. Schede has thus treated 17 cases with but one death. Anæmia is to be regarded as a strong contra-indication to operation.

Chronic Bright's Disease.—The hæmaturia from this source is usually trifling, and disappears promptly after rest and a milk diet. The hot-air bath is a valuable adjuvant. Diuretic remedies should be avoided.

Renal Calculus.—Rest is here of especially great importance. The treatment should be conducted strictly according to instructions given in the article on the treatment of renal calculus.

Pyuria.

Pyuria cannot be treated independently of the lesions which give rise to it. It is fortunate, indeed, that we are able in nearly every instance to locate the source of pus, and direct our therapeutic efforts to the particular portion of the urinary tract in which it originates. When it so happens that the diagnostic data are insufficient to a diagnosis, we are obliged to treat the case symptomatically and on general principles. The diet should contain a limited amount of nitrogenous food, and water should be administered freely. The remedies include Terebinthina, Hepar, Mercurius, Cantharis, Hexamethylendiamin, Urasol, etc. It should be our effort always to determine first whether the pyuria is of renal, vesical or urethral origin; and having done this, we must discover the nature of the underlying pathological changes: This done, we are prepared to treat the case intelligently.

Oxaluria.

I remarked, when speaking of oxaluria in my work on Diagnosis (page 549): "The clinical status of oxaluria may be said to be in a chaotic state." That statement is as true to-day as it was then. In the vast majority of cases, oxaluria should be regarded as but a symptom, which may be combined with others, forming definite clinical pictures. In a small minority only is it to be accepted as *the special* indication for treatment, and these are they in which it is controllable by diet. There may also be mentioned another class of cases in which the oxalate crystals appear in the urine, but are really examples of precipitation and not of excess. Such cases may be controlled medicinally by the administration of dilute *nitric* or *nitro-muriatic acid*.

The special articles of diet which may produce oxaluria, and, therefore, should be forbidden in its dietetic management, are rhubarb, tomatoes, turnips, onions, sorrels, spinach, figs, strawberries, apples and pears. This, of course, excludes some very important vegetable stuffs from the dietary. We are left to advise animal foods, the starchy vegetables, bread and butter, etc. There is no doubt also that sugars and sweets bear an important relationship to the production of oxaluria, and should be limited if not positively forbidden.

Oxaluria appears to bear important relations to uric acid production; hence, its treatment may be intimately interwoven with that of the latter condition.

In the majority of cases we are obliged to direct our treatment entirely to an existing dyspepsia, constipation, melancholia or neurasthenic state.

Remedies which have been suggested include *Hydrangea*, *Kali sulph.*, *Oxalic acid*, *Picric acid*, *Kali carb.*, *Senna*, *Berberis vulgaris*, and *Lysidin*. The latter is a remedy about which I know nothing excepting the testi-

mony of Clifford Mitchell,* who recommends it in doses of ten drops of the 50 per cent. solution three times daily, well diluted in water. Its action in relieving the irritability of the bladder, the irregular heart action and the nervous symptoms is said to be remarkable.

Phosphaturia.

Phosphaturia even more than oxaluria must be regarded as a symptom, the excessive excretion of phosphoric acid being the essential feature in but very few cases. The most commonly accepted origin of this symptom is undue wear and tear of the nervous system, in which case, the treatment must be directed against the existing neurasthenic state. Special attention must be paid to the patient's sexual habits, indulgence being limited as much as possible. Not infrequently it is not the excessive indulgence as much as it is improper methods of performing the sexual act that are responsible for the condition. In most of these cases there exists a vicious circle. The patient discovers the cloudy urine, and attributes it to seminal losses. This in turn produces hypochondria, which serves to aggravate the existing neurosis and intensify the phosphatic precipitation. Explanation of the existing condition to the patient rarely does any good, so firmly is he convinced of the truth of his superstition. It is needless, therefore, for the physician to expend much time in giving the patient correct information. It is better by far for him to direct every effort against the neurosis.

Another large class of cases originates in wasting diseases, as phthisis, acute yellow atrophy of the liver, leukæmia, and severe forms of anæmia. These demand reconstructive treatment for their relief.

The diet in all cases should be light but nutritious. Open-air exercise is beneficial in the majority of cases. Sleep benefits the nervous system more than any remedy; hence, the patient should have as much of it as possible. Cod liver oil is of value in most cases. Von Noorden advises the administration of fifteen to thirty grains of *Creta præparata* two or three times daily. The rationale of its action is found in the fact that the Phosphoric acid combines with the Calcium, and thus remains in the intestine or coming back and being eliminated there after absorption. He claims that one-half or more of the Phosphoric acid is thus prevented from leaving the system by way of the urine.

The use of warm baths followed by tepid douches, as advised by Ralfe, is to be commended, as this treatment is calmative of the nervous system—an important desideratum.

* The remedies that have been advised include *Arsenicum*, *Phosphoric acid*, *Berberis aquifolium*, *Kali mur.*, *Nuclein*, *Phosphoglycerites*, *Urotropin*, and *Boric acid*.

* *Diseases of the Urinary Organs*, p. 393.

Arsenicum owes its good effects to its influence on the nervous system in general. It may be used in the second decimal trituration four times daily, or as Fowler's solution in doses of three minims, gradually increased to ten minims, three times daily.

Phosphoric acid is symptomatically indicated in a very large percentage of patients presenting phosphaturia as a symptom. It is the most frequently indicated remedy in the cases attending sexual hypochondria.

The *Glycerophosphates* are highly praised by many physicians and merit a trial. Notwithstanding their extensive use, clinical reports of a reliable character are lacking.

Boric acid and *Urotropin* should be used in cases in which the urine contains pus. Harrison recommends a combination of Sodium benzoate and Sodium salicylate (seven and a half grains of each) three times daily. My experience is decidedly in favor of Hexamethylendiamin as the most effective. Similar preparations, as Cystogen and Urotropin, are largely used for the same purpose.

Nuclein is mentioned by Clifford Mitchell in the following words: "Inasmuch as phosphaturia is thought to be due to destruction of the nucleus of the leucocytes, nuclein is advised in the therapy of this disorder. Its efficacy is said to be demonstrated within twenty-four hours, when an examination of the urine will reveal a decrease in the phosphates, and an examination of the blood will reveal that the number of lymphocytes is the predominant number of white corpuscles within the blood."

Anasarca.

(General dropsy.)

In the course of discussions of the treatment of various diseases, the management of certain localized dropsies, as ascites, hydrothorax, and hydropericardium have been fully considered so far as mechanical or surgical intervention is concerned. The various homœopathic remedies which experience has demonstrated are useful in œdematous conditions generally, have been mentioned in the chapters devoted to diseases of the heart and liver, and in the preceding sections of the present chapter on Diseases of the Kidneys. The present article will, therefore, be limited to the study of the treatment of general dropsy by general hygienic management, mechanical interference, and the administration of diuretic, cathartic, and diaphoretic drugs.

1. **General Management.**—Necessarily, the patient must be kept at rest. Whether he shall remain in bed or in a comfortable chair must depend upon the posture which gives him the most ease. As a rule, the attendant dyspnœa demands the upright posture.

In a general way, the diet for much of the time must be that indicated in cardiac and renal disease. In cases of renal dropsy the best results will

be obtained by the administration of food which contains a minimum of Sodium chloride, or at most to which no salt has been added in its preparation for the table. This so-called dechloridization treatment is unquestionably a most valuable one. There are many who claim that an exclusive milk diet is valuable in dropsical conditions, mainly because of the small quantity of Sodium chloride contained in the nutriment. The theory upon which it was founded originated in the discovery of the fact that the elimination of Sodium chloride is greatly reduced in cases of nephritis. There must follow a retention of that substance in the tissues. In order that it shall remain there in proper solution it must abstract water from the blood. The importance of chloride retention in the production of oedema is shown by the fact that three pints of water are required to dissolve one hundred grains of salt to form the solution in which it is found in the tissues. It can thus be seen, if the salt retention theory of the origin of renal dropsy be true, that very little increase of that substance in the tissues is capable of producing an extensive oedema.

In ordinary cases it will be sufficient if patients are given no salt other than is added to the food in small quantities by the cook in its preparation. When this plan fails to increase urinary elimination we must be more heroic, and order that no salt whatever be given in the patient's food; or we may go to the extreme of an exclusive milk diet. Meats, which contain a large percentage of Sodium chloride, should, of course, be forbidden entirely.

Unfortunately for the value of this treatment, the human system requires salt for the maintenance of nutrition; hence, the salt-free diet cannot be continued indefinitely.

2. **Mechanical Interference.**—In dropsy of the serous cavities, tapping, as already described in the section on pleural effusion and ascites, must be repeatedly practiced. When pronounced oedema of the lower extremities is present the most convenient means of drainage is by making an incision under proper antiseptic precautions at the external margin of the foot below the malleolus. Care should be taken to make the incision not less than one inch in length, and sufficiently deep to penetrate the subcutaneous connective tissues. Needless to state, the affected limb should be kept in a dependent position that thorough drainage may be maintained. Following this little operation, the feet should be wrapped in antiseptic gauze and covered with a protective dressing, and allowed to rest in porcelain-lined basins or flat pans. The wound is very seldom the cause of any subsequent trouble, as it heals quickly after the removal of the fluid. The operation requires frequent repetition, however, to keep up the good result.

Southey's method, while efficient, is more troublesome than the method just described. The instrument used consists of a set of four

capillary silver canulæ of assorted lengths with trocar. Antiseptic precautions are adopted as before. A canula is inserted into the œdematous tissue, and a piece of fine rubber-tubing attached to it. The canula is held in place by means of small adhesive strips. The distal end of the tubing rests in a basin or other receptacle, into which the dropsical fluid drains. After a day or so the tube loosens or becomes clogged, and additional tapings are required.

Other devices for drainage of fluid from dropsical limbs have been suggested. For example, an incision is made in some dependent part of the limb, and a small funnel, to which a piece of rubber-tubing has been attached, is fastened to the parts by adhesive strips. Or, we may use a specially-devised funnel with a flange, and this sets in a ring of rubber. This may be fastened to the leg by tapes, and is not likely to be disarranged. In the majority of cases, the simple incision or the Southey trocar and canula will be found the most satisfactory treatment.

Mechanical treatment possesses the distinct advantage of promptness of result over the medicinal treatment to be described hereafter. Some even claim that it relieves the kidneys of the strain thrown upon these organs necessitated by the free diuresis required for the removal of dropsies.

The extreme tension thrown upon the skin when œdema of the legs is extreme oftentimes leads to rupture and leakage. If the parts are properly cleaned this need occasion no alarm; but it sometimes happens that neglect leads to localized ulcerations. These should be treated on ordinary surgical principles. In one extremely severe case, application of cloths wrung out in Burrow's fluid brought about prompt relief.

3. **Diuretic Remedies.**—In dropsies of cardiac origin the various heart tonics, but especially *Digitalis*, *Caffeine*, *Adonis vernalis*, and *Convallaria* will prove efficient in exciting an increased flow of urine and reducing the dropsy, providing, of course, compensation has not been ruptured too badly. Their effect may be increased by the associated administration of drugs especially designed to increase the urinary flow. Of these, my favorites for sometime past have been *Agurin* (*Sodio-acetate of Theobromine*) and *Diuretin* (*Sodio-salicylate of Theobromine*). The doses of these drugs is from five to ten grains three times daily, preferably given in capsule. They are by no means certain in their effects, for they sometimes fail. If their action is favorable their administration may be kept up for an almost indefinite period without doing harm.

Calomel is a most excellent diuretic; indeed, I used it to quite an extent prior to the introduction of the drugs above mentioned. It has the great merit of cheapness—one of not inconsiderable importance in certain communities. The dose ranges from one to three grains three times daily. I have usually given two grains each time. The first effect is a brisk purgation, which soon ceases to be annoying. After a period of from three to five days diuresis commences, and soon reaches an almost incredible degree.

Under no circumstances should the physician attempt to obtain diuretic effects by the administration of fractional doses at short intervals, as such a practice is very unsatisfactory. Patients who are taking Calomel should be watched most carefully. Twice have I seen cases in which the patient had been provided with the drug without receiving any warning as to the danger of a mercurial stomatitis, and in both, the resulting lesions of the mouth caused great suffering. It is absolutely essential that the patient be kept under close medical observation during the entire time the drug is taken. The diuretic effects of Calomel wear off in the course of a couple of weeks, after which it is useless. It acts by stimulating the renal epithelium to greater activity.

Saccharum lactis (*Sugar of Milk*) is a drug the diuretic effects of which are not sufficiently appreciated. It may be used in either renal or cardiac dropsy. The dose has been stated variously by authorities as from one-half ounce to four ounces daily. I have always used the larger quantity. It may be given as the crude powder, or dissolved in milk or water. When given in the latter medium the solution should be flavored with brandy or vanilla. It is most assuredly the diuretic to be preferred above all others when it will act, as no harm can come from its use. The value of the so-called grape cure in dropsy is alleged to reside in the large quantities of glucose consumed with the fruit, as all sugars have more or less of a diuretic effect.

Apocynum cannabinum has been used by members of our school as a diuretic for many years. Its use is open to two objections; First, that it is very apt to disorder digestion and cause vomiting when large doses are prescribed; and, secondly, the unreliability of many of the preparations on the market. The first objection applies mainly to its use in hepatic ascites. The second may be overcome by procuring the medicine from a standard manufacturer. Even though satisfied with the product, it is a good plan to try that of another pharmacist before abandoning it. It is best administered in five to fifteen minim doses of the fluid extract, three or four times daily.

Caffeine should be given in those cases of chronic renal disease in which there is cardiac weakness. It acts far more powerfully as a diuretic than any other of the heart tonics, though inferior to many of them as a stimulant. It should *never* be prescribed in acute nephritis. The dosage is four grains twice daily. As much as twenty-five grains may be prescribed in the course of twenty-four hours. Some patients cannot take it because it produces wakefulness.

Potassium bitartrate (*Cream of Tartar*) is an active hydragogue diuretic, and cathartic. A single dose of half an ounce will produce active purging, the stools being watery. When used in the treatment of dropsy it is generally administered in conjunction with *Infusion of Juniper berries*, one ounce of the Potassium bitartrate and one pint of Juniper infusion being

taken in divided doses in the course of twenty-fours. This combination should never be used in acute nephritis because of the irritating effects of the Juniper.

Scoparius is likewise a hydrogagogue diuretic, and is very reliable. The best preparation is the decoction. This is made by boiling one-half ounce of Broom tops (*Cystisus scoparius*) in a pint of water until the quantity is reduced to eight ounces. Of this, the dose is one ounce every three hours. There is a fluid extract of *Scoparius* on the market. Its dose is thirty minims.

Squill or *Scilla* may be used in dropsies when there is no associated disease of the kidneys. It is frequently given in combination with *Digitalis* or *Calomel*, very seldom alone. The dose is one to two grains every three hours. Of the fluid extract, one to three minims may be given at like intervals.

4. **Hydragogue Cathartics.**—This class of remedies is used almost entirely in dropsies of renal origin with the idea of securing elimination of the retained water by way of the bowels. As all of them are more or less exhausting in their effects, they should not be used until other measures have failed. Those which have been most frequently used in dropsy are *Elaterium*, *Jalap*, and *Magnesium sulphate*.

Elaterium is capable of producing very profuse watery evacuations with practically no pain. Its exhausting effects must be safeguarded by close observation, and on the slightest indication the administration of alcoholic stimulants. Its use is limited almost exclusively to renal cases. The dose is one-sixth of a grain of the solid extract or one-twentieth of a grain of *Elaterin*, *not repeated*. It is sometimes prescribed with benefit in uræmia, although there is no evidence that it promotes elimination of urea by the bowels.

Jalap.—This is given almost exclusively as the compound powder (*Pulvis Jalapæ Compositus*). The dose is ten to twenty-five grains, *not repeated*, until the effects of the first dose have subsided.

Magnesium sulphate is not much used, excepting as a preliminary to the administration of *Digitalis* or other cardiac tonic.

5. **Diaphoretics.**—This method of treating dropsies is limited to those of renal origin. The safest is the application of dry heat according to one of the many methods that have been proposed. It is important always that the precaution of wrapping the head in a cloth wrung out in iced water during the continuance of the hot-air bath be observed rigidly.

Pilocarpine is the most powerful sweat producing drug in the *materia medica*. It should never be used when the heart is weak. A very decided objection to its use lies in the coincident production of a profuse bronchial secretion. The dose is one-tenth of a grain hypodermically, which should not be repeated until the effects of the previous dose have passed off entirely. The dose of the fluid extract of *Jaborandi* is one-half to one fluid drachm. *Pilocarpine*, the alkaloid, is the more reliable preparation.

CHAPTER XVIII.

DISEASES OF THE GENITO-URINARY ORGANS.

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It is the writer's aim to outline in these chapters the modern treatment of genito-urinary diseases. Every method embodied in therapy, preventive, hygienic, dietetic, medicinal, as well as topical and surgical, has been accorded its place.

The lesions of the genitalia will, of course, receive due consideration. It must, however, be remembered that, with but few exceptions, these conditions belong in their incipency to the dermatologist, and in their later manifestations to the internist. Naturally, then, the urological conditions are principally dealt with.

Gonorrhœal Urethritis.

(*Acute anterior urethritis.*)

Hygienic and Dietetic—An attack of specific urethritis calls for immediate treatment, and lucky indeed is he who is able to quickly and thoroughly eradicate it, as this is but too often one of the hardest tasks the physician has to accomplish. Very often his efforts are frustrated by a complexity of conditions over which he has no control; for instance, the patient's personal habits, occupation, surroundings, ability and willingness to receive treatment, or an occasional error in judgment in prescribing treatment not exactly suited to the individual. Many cases owe the continuance of the urethral discharge to excess rather than to lack of treatment. Of all the therapeutic measures employed to eradicate gonorrhœa perhaps not the least important concern hygiene and diet, and it should be remembered that neglect of these frequently make "a cure" impossible.

An ideal treatment would consist of absolute rest in bed, a light diet, and those local and internal measures which would appear to be indicated. But except in the few instances of those who are unemployed and free from every kind of care, such a plan is not practicable. Acute gonorrhœal urethritis is, unfortunately, by many regarded somewhat lightly. It is often difficult to convince patients of the necessity for this method of treatment.

Cleanliness is a most important essential. Particular attention must be paid to the care of the hands; after handling the penis they must be thoroughly cleansed, paying especial attention to the nails; otherwise, in

an unguarded moment, the nose, and more particularly the eyes, may become infected. It is *my unvarying custom* to emphasize the value of such measures. The dressings employed should be light and so arranged as to catch the urethral discharge and thereby protect the patient's garments. For this, use a single piece of aseptic gauze about four inches square; a hole is made in the centre sufficiently large to allow the glans penis to enter; by gently enlarging this aperture the gauze may be comfortably retained in place. A long prepuce is of advantage in holding the gauze securely, although, if properly applied, it rarely becomes loosened, as it should only be retained from one act of urination to another. The ends should be fastened together to catch the discharge. Valentine advises the use of absorbent cotton soaked in 1:6,000 Mercuric bichloride placed at the meatus and there retained by the foreskin. Such a plan is advisable, but naturally lacks adaptability to those who have been circumcised. A snugly-fitting suspensory bandage should be worn throughout the entire attack. Its use possesses many advantages, as it supports the penis and scrotum firmly. By thus preventing unnecessary jarring of the genitalia the tendency to inflammation and complications is greatly lessened. The penis should be immersed two or three times daily in water as hot as may be comfortably borne. This also serves to reduce congestion and inflammation.

Sexual intercourse must be strictly prohibited. Occasionally, however, it is practiced with disastrous consequences to the urethra and its adnexa, causing local and far-reaching complications. Attempts must be made to subdue all erotic and lascivious thoughts.

It is advisable to insist upon a daily bowel movement, as constipation serves to increase perineal and rectal discomfort and genital inflammations. Scrupulous attention must be paid to diet. All heavy articles of food should be interdicted, as they stimulate and excite. Milk, broths, eggs, bread and butter and similar articles should be taken. Meats, shell fish, foods highly seasoned with the usual condiments, asparagus, cheese and strawberries must be strictly forbidden; also alcoholic wines and malt beverages, especially champagne and beer.

Finger allows alcoholic habitues to have a little light wine with their dinner; but though such may be necessary as a constitutional, it is always taken at the expense of the urethral condition. Of course, in treating the urethra one must be careful not to take away from enfeebled patients too much of that which nourishes them. Many patients substitute the effervescing and carbonated waters for alcoholic drinks, but these, too, are very injurious and should be forbidden. It is well to partake of the bland waters, such as Poland and distilled. Moderate indulgence in tobacco is not directly productive of harm.

Considerable diversity of opinion appears to exist as to urinary anti-

septics and balsams. The urinary antiseptics, such as Urotropin, Salol and Boracic acid have apparently no influence on the lower urinary tract. Indeed, in posterior urethro-cystitis their administration increases the local discomfort. Their sphere of therapeutic activity is on the kidney and ureters and occasionally the bladder. The balsams, especially the Oil of Sandal-wood and Balsam of Copaiba, have a blenorrhagic effect, inasmuch as they lessen the burning on urination and perhaps diminish the discharge, but, as proven by microscopic investigations, they have absolutely no destructive effect on the gonococci. Their administration is, in some cases, followed by backache, disorders of digestion, and frequently erythema. When well-borne, however, they may be used advantageously throughout all stages of an attack. Especially are they valuable in involvement of the posterior urethra. Sandal-wood oil and Copaiba are best administered in capsules. The dose should vary from ten to twenty minims three times a day after meals. These drugs may be used alone or in combination with each other. The administration of alkalies is rarely ever necessary. An alkaline reaction of the urine is undesirable, as such may favor cystitis, whereas an acid reaction measurably prevents the proliferation of bacteria. While these various drugs may be of occasional value, with appropriate local treatment the indications for their employment are less evident.

Before commencing local treatment or, in fact, any form of treatment, it is absolutely necessary to have definite knowledge of the character of the urethral infection and of the portions of the urethra involved. Diagnostic tests must be rigidly instituted in order to determine whether there is a gonococcic infection and, if so, whether the anterior or the posterior urethra be involved singly or together. This is of the utmost importance, since the microscopic findings will determine the medicament to be used. If the posterior portion be invaded treatment directed only to the anterior canal will naturally be valueless. A careful perusal of the symptoms should be a most helpful guide as to the character of the treatment to be employed, as every case is a law unto itself, and may call for either local, internal treatment or a combination of both.

The abortive method of treatment is unquestionably efficacious in many instances, but in order to be successful the patient should present himself for treatment within twelve hours at most after noticing the urethral discharge, as the gonococci rapidly succeed in penetrating the upper surface of the urethral mucous membrane. The abortive treatment was first practiced by Cotes, of London, about fifteen years ago. His method consisted in applying through the urethroscope, by means of cotton wrapped around an applicator, a 4 per cent. solution of silver nitrate to the first two inches of the urethra. He claimed good results with this method. Acting upon the suggestion, in 1896 I experimented with two hundred cases and reported results in the *Hahnemannian Monthly*, June, 1896. They were fairly good.

Two or three applications were usually made at intervals of forty-eight hours. This method, however, is open to certain objections; sharp and severe reactionary symptoms not infrequently arise, and one may see following such treatment severe pain, bleeding, penile œdema, lymphangitis and posterior urethritis and its complications, or the first step in stricture formation.

The abortive treatment now employed is as follows: First have the patient urinate; this cleans the urethra. The anterior urethra is then irrigated, morning and evening, in private patients, and once daily in the clinic patients, with a solution of Protargol, 1 : 2,000; after this the patient lies on the operating table and receives an injection of two drachms of a 1 : 400 solution of Protargol. The solution is held within the canal exactly five minutes. The strength of the hand injection of Protargol is gradually increased until it equals a 1 : 100 solution. This treatment, in the absence of complications, is continued until the gonococci have entirely disappeared, usually taking about seven days; as a rule, however, this method is unsatisfactory.

The Methodic Treatment.—It is my observation that the majority of cases do not seek advice until the disease is in the stage of active inflammation and the discharge is profuse, thick and creamy. Great caution must now be exercised not only in selecting a drug to be used locally, but in applying it as well. With this end in view, care should be taken to arrive at a correct knowledge of the length of the urethra involved.

Ordinarily, it takes about twenty-one days for the average gonorrhœal urethritis to invade the posterior urethra, but in a very respectable minority of cases, especially in very active inflammations, I have found within a few days after infection not only the posterior urethra invaded, but the prostatic as well. In the diagnosis of the areas involved in acute urethritis, it is rarely ever necessary to employ more than the two glass test. If the patient urinates in two beakers, that voided into the first glass will represent a portion of the contents of the bladder as well as the pus washed away from the urethra; the second glass will contain what is left within the bladder; if both glasses be cloudy, then the posterior as well as the anterior urethra is involved, but if only the first glass is cloudy while the second remains clear, then the condition is confined to the anterior urethra.

Frequency of urination detracts from the value of this test, consequently for daily inspection it is desirable to have the urine passed into two bottles immediately upon arising in the morning and then brought to the office for examination. Cloudiness dependent upon phosphaturia may be quickly converted into clear sparkling urine by the addition of acetic acid. If due to urates, boiling will render it clear, while cloudiness due to bacteria may be detected by the fishy odor and the microscope.

Of the methods used to treat the acutely inflamed urethra locally I rely upon irrigations. Injections are not as efficacious as irrigation, as they do not distend every portion of the urethra. I do not permit a patient,

unless he is expert in urethral manipulations (and how many are, especially with their first attack), to take his own injections. Most of the complications that have arisen in my practice have been due to self-inflicted injury resulting from the use of a hand syringe. In fact, I am very much opposed to placing the treatment of such a grave disease within the power and discretion of an inexperienced patient. With this possibility in mind, I always insist upon the patient receiving treatments at my office. If they object, I explain the danger and insist that any untoward result must not be attributed to a mistake on my part.

The irrigation method, as suggested by Janet, is the ideal one. I have used it in my clinical and private practice for years, and will continue its use until I find something superior. The character of this work precludes space for a description of this instrument; besides, its popularity has made it familiar to many practitioners.

Technic.—Most clinicians insist upon their patients being seated while using irrigations. This plan, however, I have never followed. I have always permitted them to assume the upright position, both for anterior and intra-vesical irrigations. Occasionally, I have observed a momentary faintness, which, upon the patient assuming a recumbent position, quickly passed off. I have observed similar degrees of faintness while irrigating patients who have been seated upon a chair, or even when they have been in the recumbent posture. When practicable, the patient suffering from acute anterior gonorrhœa should receive morning and evening irrigation, allowing if possible from eight to ten hours to intervene between each treatment; such a plan seems suited to most cases. When it is impossible to receive irrigations twice daily, then once a day often serves admirably to alleviate sufferings. Although many advise intra-vesical irrigations in acute anterior gonorrhœa, I have discarded them, thinking it more correct to limit the medicament solely to the diseased locality. An auto-irrigator is made which is a fairly good substitute for the original model. Its use is, of course, intended for those who, for lack of time or other reasons, cannot receive the benefit derived from the office irrigation. Not a few practitioners, as well as some urologists, object to this method, claiming that it subjects the patient to the expenditure of too much time and money, and that equally good results may be obtained by other methods. Others claim that its use favors, by sending the fluid into the posterior urethra, complications such as epididymitis, cystitis, and possibly the involving of other parts of the genito-urinary system. The first objection is hardly a good one, and the second one I have so rarely verified that I discard it. Its advantages, however, are manifold. Among these may be mentioned rapidity of cure.

Goldberg is authority for the statement that 90 per cent. of cases are cured within fourteen days. Personally, I am inclined to regard this emi-

nent authority as somewhat enthusiastic as to the length of time necessary to complete a cure, but irrigations certainly do possess the power of curing the disease more quickly than any other method which has before or since been tried. After the second or third irrigation the profuse discharge diminishes; the burning on urination decreases, and the chordee which, when other methods of treatment are employed, frequently renders the nights wholly sleepless, is resolved into a few painful erections, scarcely requiring camphor or other internal medications for its control. Irrigations, too, largely prevent posterior urethral invasion, and although it has been claimed that posterior urethritis develops despite all methods used in from 80 to 90 per cent. of all cases, yet I would take issue with these statistics.

The earlier advocates of the irrigation treatment largely employed Potassium permanganate in a strength varying from 1 : 5,000 to 1 : 2,000. This solution, when used with a quart of hot water at a temperature of 110° F., produces an artificial œdema of the urethra, thus making it an unsuitable soil for gonococcic development. Potassium permanganate unquestionably is a most valuable therapeutic agent, but I now employ it in the stage of decline, giving preference in the inflammatory stage to Pro-targol, 1 : 1,000. Its action on the gonococci is more rapidly destructive than any other agent except Nitrate of Silver, but as the latter drug is too irritating its use has been largely abandoned in actively inflamed urethræ. Occasionally, when the microscope shows many pus cells and few gonococci, a solution of Bichloride of Mercury, 1 : 20,000, is added to the permanganate solution. Such a combination apparently produces a diminution of pus cells. Even in the declining stage I have rarely found it necessary to relinquish irrigations in favor of astringent injections, finding the gonococci on the mucus membrane are rapidly destroyed. Astringents are indicated only in the stage of decline, and are sometimes serviceable in subduing the resultant urethral catarrh.

The most efficacious astringent injections are :

R Zinc sulph.
 Pulv. Alum., āā gr. v.
 Acidi. Carbol., gr. iv.
 Aqua dist. q. s. ad., ℥iv.

Sig.—Inject A.M. and P.M. ;

or

R Zinci. sulph., gr. xv.
 Plumbi. Acetat., gr. xxx.
 Aqua dist. q. s. ad., ℥vi.

Sig.—Inject A. M. and P.M.

An injection which I find occasionally serviceable is

R Bismuth subnitrate, ℥j.
 Aqua dist. q. s. ad. ℥j.

Sig —Injected A.M. and P.M.

The disappearance of the discharge by no means indicates that the urethra is healed. Long after most portions of the mucous membrane have received a new cellular covering, the follicles and urethral crypts may harbor gonococci ready to infect at any time. It behooves us then at this time to commence a series of urethral dilatations. This is best accomplished by means of Kollmann's Anterior Dilator. This instrument is a four-branched dilator, and is capable of being dilated from 21 F. to 45 F. The patient is on a table, the back of which is raised forty-five degrees. The dilator, protected by its rubber cover, is lubricated and gently passed into the meatus as far down as the bulb. The branches are then gently expanded by turning the screw until the patient experiences a slight degree of discomfort. This should be the index for the amount of dilatation necessary for one sitting. The dilator may be allowed *in situ* for two or three minutes, when it should be screwed down to 21 F. and gently withdrawn. A certain degree of reaction always follows dilatation. With some there is bleeding and irritation, with others a profuse discharge, and again only a slight irritation, the discharge lasting but a few hours. Following these dilatations, which should be conducted with the most rigid cleanliness, the patient should receive an irrigation of a 1:1,000 solution of Protargol. The effect of dilatations and subsequent irrigations with a silver preparation is to expand the canal, melt infiltrations, and cause an expression of morbid material from the crypts and follicles. The irrigations serve the double purpose of cleansing the urethra and preventing urinary fever. Such treatments should be given every five days. At each sitting the urethra may be dilated to one or two degrees achieved above the previous treatment. Sometimes it may be necessary to irrigate daily between these dilatations, especially when there is much discharge following. The medication used must be selected according to the microscopic findings. Silver preparations for gonococci, Potassium permanganate or bichloride of Mercury for other organisms. In some, these dilatations are illy tolerated. Under such circumstances I employ instillations of 4 per cent. aqueous solution of Copper sulphate suspended in Glycerin. This solution acts as an antiseptic as well as an astringent, and in many instances suffices to effect a cure.

Instillations are given with the author's instillation syringe. This instrument combines the properties of a urethral sound and instillator as well, inasmuch as it consists of six sterling silver hollow sounds varying in size from 18 F. to 30 F., having a universal thread for connection with an all-metal syringe, the capacity of which is one drachm. The syringe consists of an all-metal barrel with an all-metal plunger, at one end of which is a broad thumb piece; the plunger is also graduated so that any amount up to sixty minims may be instilled. The plunger is held in place by a screw-cap containing a cross-arm, which answers the

the purpose of steadying the instrument while manipulating. The attachment containing the universal thread may also be removed from the barrel. This, when detached in conjunction with the cap containing the cross-arm, facilitates cleansing the instrument.

The ordinary Thompson sound is a very good substitute for those who do not possess a dilator. The indications for its use and its therapeutic advantages are similar to the Kollmann's Anterior Dilator. Occasionally, one finds a meatus too small to allow of an instrument having a calibre of 21 F. to pass. Under such circumstances it necessitates an operation to divide it up to the required size. (The technic of this operation will be discussed under chronic urethritis.) The persistence of urethral shreds in defiance of these precautions argues in favor of follicular involvement. It must be remembered that not infrequently a urethral discharge is perpetuated by reason of too active treatment, consequently, when the microscope shows disappearance of gonococci, it is advisable to allow at least four or five days' rest before resuming treatment.

Acute Posterior Urethritis.

Should, however, the discharge find its way beyond the compressor urethra muscle and invade the posterior urethra, then a complexity of symptoms, depending upon the severity and extent of invasion, demand our attention. The presence of posterior urethral invasion is quickly recognized by the distressingly acute symptoms, coming on usually about the time when we should expect a subsidence of anterior urethral symptoms. Frequent and imperative urination, associated with severe pain, "never get done" feeling, and perineal tenderness are too suggestive to be misleading. Suspicion may readily be confirmed by observing some diminution in the urethral discharge; and if the two glass test be employed a cloudy urine in the second glass. Rectal examination in these cases should be employed, not only with a view of confirming the diagnosis, but also to detect, if present, any prostatic complications.

Unfortunately, the practitioner is called upon to treat this phase of gonorrhœa so often that some clinicians rate its frequency as high as 90 per cent., and in anticipation of this complication treat all their anterior urethrites by intra-vesical irrigations. This I believe to be very reprehensible practice, for, as stated before, it is very likely to result in severe complications. Having these possible complications in mind, then, I invariably refrain from any local treatment whatsoever in the acute of posterior urethritis. Experience has taught me that local treatment injudiciously applied in such cases drives the gonococci into the substance of the prostate, the epididymis, seminal vesicles and bladder, and causes, remotely, an ascending urethritis. Local urethral treatment is in the earlier stages not indicated; indeed, in addition to its other dangers, it serves to increase rather than to

allay the patient's distress. Pain, if very severe, may be controlled by a rectal suppository consisting of:

R Opii pulv., gr. j.
Ext. belladonna, gr. $\frac{1}{2}$.

Ol. Therebromin, q. s.

M. Sig.—One into rectum A. M. and P. M.

It is very essential for the patient to have a few days in bed until the acuity of the symptoms has abated. Hot sitz-baths are very grateful. The diet should be liquid, nourishing and unirritating. It is not desirable that the patient drink liberally of water, since over-activity of the bladder serves to increase the local hyperæmia.

The writer is very enthusiastic over the efficacy of the indicated remedies in these conditions, and invariably prescribes them. *Cantharis* is possibly best suited for these cases. A view of its pathogenesis shows frequency, urgency, pain, scalding, burning and occasionally blood, the symptoms being all referred to the posterior urethra and bladder neck. It should be given comparatively often. *Terebinth* is also indicated for the per acute cases when, in addition to the symptoms just enumerated under *Cantharis*, strangury and blood predominate. *Aconite* is another excellent remedy. It is often given advantageously in combination with *Cantharis*. *Petroselinum* may be given when the acuity of the symptoms have declined, and *Pulsatilla*, too, must be thought of at this stage. It is a mistake to suppose this remedy indicated only for the milder urinary symptoms. *Hepar* and *Sulphuris calcarea* is likewise indicated in the milder expressions of posterior urethritis. Occasionally, local relief may be obtained through irrigating the posterior urethra with a decinormal salt solution by means of a hand syringe and a soft rubber catheter. As the symptoms abate and the urine in the second glass becomes less cloudy, then intra-vesical irrigations of 1:4,000 Protargol may be given every other day. Upon the disappearance of the gonococci Permanganate of Potassium may be substituted. I have not infrequently found instillations of Nitrate of Silver, varying in strength from one-half to five grains to the ounce, valuable in the declining stage when the urine is turbid and shows shreds. A few drops of this solution given every three days for several weeks frequently hastens a cure. It must be remembered, however, that acuity contra-indicates instrumental treatment. Sandal-wood oil is often very grateful to these patients, but even better results may be obtained by the other remedies enumerated. While treating posterior urethritis the possibility of prostatitis and bladder and other complications must not be lost sight of.

What are the proofs of a cure? A man may be said to have been cured of gonorrhœa: First, when no discharge may be obtained upon careful stripping of the urethra; second, when the microscopic examination of the centrifuged urine shows but a few pus cells and an absence of infect-

ing organisms; third, when artificial methods resulting from champagne, beer and instruments either fail to produce a discharge, or, if provocative of one, shows no gonococci or other infecting organisms; and, fourth, when stricture, prostatitis, seminal vesiculitis, pyelitis or other complications do not exist.

Before dismissing a patient the alcoholic and instrumental tests should be rigidly tried and several urethral examinations made. Urethroscopy may, to the practiced eye, reveal lesions demanding attention. Finally, before dismissing a case, I now resort to cystoscopy; negative findings make assurance doubly sure. The foregoing remarks apply only to the treatment of an uncomplicated attack, as acute specific anterior urethritis.

Chronic Urethritis.

Although not demanding such strict attention to certain articles of diet as in the acute form, wines or malt beverages must be strictly forbidden, since such not only may cause a return of the discharge but may even perpetuate it. For similar reasons sexual intercourse must be prohibited.

The treatment of chronic urethritis depends upon the microscopic findings, the extent of surface diseased and the location invaded. Our first duty is then to institute a rigid examination, as quick and accurate results can be obtained only by such means. With this end in view, it is necessary to recall the symptoms found in each variety, since the urethra may be chronically inflamed, both in its anterior and posterior portions, both parts being either superficially or deeply invaded. Without taking the time necessary to discuss the symptoms present in each, for convenience a modification of Finger's Diagnostic Table is given on page 733.

The prostate and seminal vesicles being often involved in chronic posterior urethritis, tests must be employed to determine if such is the case. This is accomplished by first irrigating the patient's bladder, having him void urine, and then introducing the forefinger into the rectum and massaging the prostate. This causes an exudation of its secretions into the urethra. Or, following this, the bladder may be filled with sterile water and again emptied. In either event, the prostatic secretion is examined for gonococci or bacteria. In a similar manner the contents of the seminal vesicles are examined.

Chronic Superficial Anterior Urethritis

Demands the employment of such measures as will check the usual muco-purulent catarrh and promote the formation of new epithelium. Since the gonococci are usually found in this variety, irrigations of 1:4,000 solution of Protargol should be given, adopting the same rule for their use as has been suggested in treating acute anterior urethritis. Later on, when the discharge diminishes and the urine becomes clearer and shows microscopically strings or floaters, called "clap shreds," stronger remedies must

Modification of Finger's Table.

Differential Diagnosis of	Chronic Anterior Urethritis.		Chronic Posterior Urethritis.	
	Superficial.	Deep.	Superficial.	Deep.
Secretion at the orifice of the urethra.	1. In more recent cases, mucopurulent secretion, constantly or as "good-morning" drop. 2. In inveterate cases: gluing of meatus, constantly or only in the morning, or meatus perfectly dry.		No secretion at meatus. (N. B.—Any secretion which may be present comes from pars anterior and does not exclude posterior urethritis.)	
Microscope.....	As usually gonococci and other bacteria.	Gonococci are in the deeper structures, not usually found, except after sounding or examination of urethra with Bougie-a-boule. Other bacteria often present.		
Test of the two beakers.	First portion slightly cloudy, or clear with clap shreds; second portion clear without shreds.		1. In more recent cases: first portion slightly turbid with clap shreds; second portion slightly cloudy with or without Fuerbringer's hooks. 2. In inveterate cases: first portion clear with clap shreds; second portion clear with or without Fuerbringer's hooks.	
Test of two beakers after irrigation of the pars anterior.	Both portions clear.		1. In more recent cases: first portion slightly cloudy with clap shreds; second portion slightly cloudy with or without Fuerbringer's hooks. 2. In inveterate cases: first portion clear with clap shreds; second portion clear with or without Fuerbringer's hooks.	
Urethroscopy.....	Catarrhal swelling, redness, erosions, punctate spots.	Changes in surface color, erosions, granulations in pendulous urethra and frequently at the bulb.	Various grades, vivid redness of surface, bleeds easily and freely or dark bluish color. Erosions. Granulations rare. Thickening of caput; in old cases color may be yellowish or gray.	
Examination with urethrometer and Bougie-a-boule.	No diminution of dilatability.	Diminution of dilatability in one or more circumscribed spots.		
Other characteristic symptoms.	None	None	Increased or imperative tenesmus prostaticorrhœa.	Increased or imperative tenesmus, prostaticorrhœa micturition or defecation spermatorrhœa, sexual irritative or paralytic symptoms; increased desire, frequent pollutions; precipitate ejaculations, pain on ejaculation, feeble erection, impotence, neurasthenia. Since the prostate and seminal vesicles are so often involved in chronic posterior urethritis, tests must be employed to determine if such exist.

be employed. Pathologically, the process is now located usually at the bulb, the middle of the pars pendula and the fossa; the other portions of the urethral mucous membrane being healed, consequently it is unnecessary to employ very strong solutions by irrigation, as they would defeat our purpose by irritating the urethra and thereby provoke a discharge. These isolated spots, however, may be touched with solutions of Nitrate of Silver through the urethroscope or by means of my instillation syringe.

Commence with a solution of Silver nitrate, two grains to the ounce, instilling upon these spots from four to five drops. This procedure is here beneficial for the following reasons: The introduction of the sound lessens congestion, causes an expression of morbid material from the urethral follicles, induces resorption of cicatricial tissue and promotes the formation of new epithelium. The silver acts as a bactericidal and astringent agent. The necessity for the utmost gentleness in the use of this instrument should be particularly emphasized, otherwise severe results may follow this or any other urethral instrumentation, urethral chill, bleeding and possibly a severe attack of urinary septicæmia. Instillations may be given every two, three or four days, increasing the strength to twenty or thirty grains to the ounce. As a substitute for Silver nitrate I often use a few drops of a 2 per cent. solution of Copper sulphate and Glycerin, equal parts. It must continually be borne in mind that the condition may be fostered by too much treatment; consequently, after a reasonably fair trial, treatment may be suspended for a few days if the urine shows many shreds. These may be due to an involvement of crypts, necessitating the employment of Kollmann's electrolytic needle for their destruction and ultimate cure. In many instances the persistence of these shreds does not argue unfavorably, since frequently they are innocuous.

Too much value cannot be placed upon the urethroscope as a therapeutic agent in the treatment of all forms of chronic urethritis. It is a mistake to adjudge it a diagnostic instrument only. Not only may lesions be accurately located by it, but medicaments may be directly applied through it to the diseased areas. The solutions which I employ are the varying strengths of Nitrate of silver from two to thirty grains to the ounce and the Sulphate of copper solutions previously mentioned.

Sometimes a narrow and contracted meatus prevents the introduction of an instrument of proper calibre. In such an event it must be divided. The operation is a very simple one. Cocaine anæsthesia is sufficient; divide slowly and carefully to the size required. Sounding must then be employed until after the wound heals or until the proper urethral calibre is obtained.

Medicated ointments are of decided value in treating the more rebellious forms of either chronic anterior or posterior urethritis, since they serve to melt the infiltrates and soften epithelial thickenings; moreover,

given to those situated about the fossa navicularis. Very hard, tortuous, irritable and resilient strictures, wherever situated, should be cut; likewise congenital narrowings about the meatus. Other varieties may be dilated, provided the chronic urethritis caused by their presence disappears; otherwise they, too, should be incised. The object of instrumentation is to restore the calibre of the urethra by the process of absorption. This may be accomplished, in the character of cases previously mentioned, by gradual dilatation, the necessary instruments for which are a set of curved sounds, Kollmann's four-branched anterior dilator and Oberlander's dilator. Curved sounds are universally used to dilate strictures; their mechanism and technic of employment are familiar to all. Kollmann's dilators are the best instruments as yet invented for the treatment of urethral narrowings, situated between two and a half and four inches of the meatus; they are protected by a rubber cover, thereby preventing their blades from injuring the walls of the canal. The anterior dilator has four branches, which may be dilated from 20 F. to 45 F. When introduced into the urethra it may be allowed to remain there until the necessary degree of dilatation desired for one sitting is obtained. With this instrument it is possible to obtain fractional degrees of dilatation. The curved dilator of Oberlander is used for the dilatation of the bulbous portion of the urethra. Kollmann's four-branched dilator for the posterior urethra is well adapted to the dilatation of strictures about the bulbo-membranous junction. Recently, dilators with irrigating attachments have been invented. They are not particularly necessary, as the same benefit may accrue from following the use of the ordinary dilators and urethral irrigations.

Recent soft infiltrates of the pendulous urethra are readily absorbed by using steel sounds. The size selected should be two millimeters smaller than the opening of the canal. After sterilizing and anointing with lubricene, an attempt should be made to gently pass the sound, the patient occupying the recumbent position; should the meatus be too contracted, it should be cut and deeper urethral treatment postponed until it heals. Following instrumentation there may be burning during urination and a slight discharge. These unpleasant symptoms, however, pass away within twenty-four hours. After five days, unless complications occur, the operation may be repeated, increasing at each sitting the size of the sound two millimeters until the full calibre of the canal is restored and the urethral discharge disappears.

The narrowings are accurately located by Otis' Urethrometer, the use of which frequently obviates the necessity of performing a preliminary meatotomy. After the customary antiseptic toilet the urethra should be anæsthetized by injecting two drachms of a 4 per cent. solution of cocaine. The instrument should be perfectly clean and protected with a rubber cover, well lubricated and passed (if the tube permits) to a depth of five

and one-half inches; its bulb should then be enlarged to suit the calibre of the urethra and an attempt made to withdraw the instrument. While no absolute rule can be given regarding the calibre of the urethra, Otis maintains that a normal canal should allow the passage of a number 30 F. sound, and for every increase or decrease of a quarter of an inch in its circumference two millimeters should be either added to or subtracted from the scale.

If, during urethral exploration, the points of normal narrowing of the anterior urethra at the middle of the spongy portion and the meatus are recalled, errors in diagnosis cannot occur. Moreover, strictures of gonorrhœal origin are most frequently encountered in the first three inches of the urethra. Following this operation the canal should be irrigated with a 1:4,000 solution of Nitrate of silver.

This instrument, perfectly aseptized, is introduced beyond the stricture, and is then dilated to several millimeters beyond the urethral calibre. The division of the stricture is accomplished by withdrawing the knife from its groove. Care must be taken to cut only the stricture and to avoid making a long slice in the roof of the canal, thus encroaching upon sound tissue; otherwise, incurvation will follow. I am firmly convinced that most cases of incurvation following internal urethrotomy may be traced to too free incisions.

Freedom from narrowing is demonstrated by ability to withdraw either a full-sized bulbous sound or the urethrometer. This operation may be performed under cocaine anæsthesia, but for perfect work a general anæsthetic is desirable. Hæmorrhage may be controlled by applying a firm bandage to the penis. The patient should remain perfectly quiet, preferably in bed, until after the first sounding. Provided no complications occur, ten days after operation a full-sized sound should be passed and the urethra irrigated with a 1:4,000 solution of Nitrate of silver. The complications to be dreaded in internal urethrotomy are incurvation of the penis, sepsis, hæmorrhage and shock.

When a stricture of large calibre is located at the bulbo-membranous junction, and there exists a subacute posterior urethritis, together with a degree of cystitis, it is necessary, in order to obtain good results, to institute drainage. Under such circumstances the patient should be etherized and placed in the lithotomy position and an incision made into the urethra upon a grooved staff. After the contracted areas have been freely divided the staff should be removed and the anterior canal explored for narrowings; if found, they may be removed by internal urethrotomy. During operations the sphincter vesicæ may be stretched and the bladder explored. Freedom from narrowings is demonstrated by passing a full-sized sound into the bladder, after which a drainage-tube is tied in and the bladder drained through the perineal route. Benefit is thereby obtained, first, by

temporarily abandoning the function of the anterior urethra; second, by temporarily paralyzing the sphincter vesicæ; and, third, by furnishing an avenue for bladder-irrigation. I am sure that if this operation were more frequently made, good results would follow. Urethritis, due to stricture of small calibre or to filiform stricture, demands either dilatations or, oftener, a cutting operation for eradication.

Not infrequently the chronicity of a gonorrhœa and the frequent exacerbations of a urethral discharge are due to an invasion of crypts, glands, and follicles which may yield to a series of dilatations and irrigations. Should these fail such must be treated through the urethroscope, either by injections, curettage, or division, or by the electrolytic needle. Kollman has invented and perfected the instruments necessary for such work. By means of his urethral gland syringe a 2 per cent. solution of Silver nitrate may be injected directly into the invaded glands, or they may be curetted or divided. The best results, however, are obtained by using his electrolytic needle. The needle is attached to the negative pole of a galvanic battery; the positive electrode is placed firmly upon the thigh. The needle is then carefully inserted into the gland as deeply as is possible without force. The current is turned on very slowly at three milliamperes, when bubbles will be seen rising from the gland. It takes about thirty seconds to accomplish this; only two or three glands should be destroyed at each sitting. Such treatment frequently cures.

Chronic Posterior Urethritis.

Chronic posterior urethritis of gonococcic origin rarely exists alone; usually the anterior urethra is involved as well. Clinically, we recognize two forms, superficial and deep.

Chronic Superficial Posterior Urethritis

Presents only an involvement of the mucous membrane and glands. The indications here are to destroy the gonococci, remove the pus and clear the urine. This may be effectually accomplished by daily irrigations with the Valentine apparatus. The technic of its employment has been outlined under the treatment of acute anterior urethritis. The medicament to be employed must be determined by the number of gonococci or other organisms present, and should be employed in strengths about one-half less than when used for the anterior urethra. After the pus disappears and the urine becomes clearer instillations may be given upon the diseased surface as described under chronic anterior urethritis. The urethroscope is frequently necessary to effect a cure. The affected areas may be brought directly into view and strong Silver solutions, gr. ten to twenty to the ounce, or Copper sulphate and glycerin, equal parts of a 4 per cent. solution, may be directly applied. Considerable reaction usually follows pos-

terior urethroscopy, evidenced by bleeding, pain, burning during urination, and cloudiness of the urine. The treatment may be repeated every fifth day. The recurrent discharge may be controlled by intra-vesical irrigations of 1:4,000 solution of Nitrate of Silver.

Chronic deep posterior urethritis presents, in addition, infiltrates which must be absorbed. This can be accomplished by the use of sounds and dilators. They should never be used where there is much suppuration.

The *best* sounds are the Benique or the Guyon, as they are patterned after the urethral curve. The indications for their employment are given under the treatment of chronic prostatitis. Chronic posterior urethritis rarely ever exists alone, but is usually associated with some form of prostatitis, seminal vesiculitis, cystitis, or other complication, the eradication of which is essential to the cure of the existing posterior condition. The remedial measures employed for prostatitis as a complication are discussed elsewhere. The accompanying sexual neurasthenia slowly disappears if the proper course of treatment is pursued.

The treatment of chronic posterior urethritis should not be dismissed without reference to the frequent necessity for perineal drainage in chronic gonorrhœa. While most attacks of posterior urethritis are cured by the means just enumerated, yet some cases not only fail to recover through such methods but their symptoms are aggravated thereby. Especially is such the case when the bladder is involved. The urethral discharge persists, the urine is loaded with pus and the pathogenic bacteria common to such cases; the calls to urinate are frequent, often hourly, both by day and night, and the act distressing throughout. Frequently, the last few drops voided are tinged with blood and complete incontinence may follow, the sufferer being compelled to wear a urinal. Residual urine is always present, the amount varying from one-half to three ounces. In consequence, the strength fails, which, together with the symptoms just mentioned, may lead to a suspicion of urogenital tuberculosis. Relief is imperative, and can be obtained by perineal drainage.

The remedies of service in chronic urethritis are *Cantharis*, *Graphites*, *Kali bich.*, *Merc. cor.*, *Mesereum*, *Selenium*, *Sepia*, *Sulphur*, *Thuja*.

Epididymitis.

Since this complication so frequently arises from posterior gonorrhœal urethritis, its prophylactic treatment suggests a rapid cure of posterior complications.

It is advisable to place the patient in bed and to keep him there until all inflammatory symptoms have subsided. Although many are carried through an attack while attending to their daily duties, yet such is not productive of the best results. The bowels should be freely opened; the diet light and nourishing. All local urethral treatment must be suspended.

The best remedy is *Pulsatilla*; it causes a return of the urethral discharge and subdues the pain and swelling. It may be combined with *Aconite*. The severe pain due to an acute swelling of the tunica vaginalis may be immediately relieved by puncture with a hypodermic needle. Local applications are of decided value, and of the many now in use I place the most reliance upon Ichthyol, 25 per cent., in Lanolin. It is best applied over the whole scrotal area, the scrotum being firmly supported by a suitable bandage; relief quickly follows. Strapping the testicle is a relic of barbarism in which I do not indulge.

Neither do I believe in the application of the Paquelin cautery. Pus formation calls for incision. In acute exacerbations, unilateral or bilateral, vasectomy or ligation of the vas of the side affected may be practiced, thus preventing constant re-infection. Perineal section I have also found useful in many cases, as such affords an avenue for drainage.

Chronic epididymitis is ameliorated by mercurial inunction and Iodide of Potassium internally. Resection of the nodular mass has been employed, making an anastomosis with the vas. The coexisting chronic posterior urethritis must, of course, receive appropriate treatment.

Seminal Vesiculitis.

Most cases of seminal vesiculitis arise by extension from the posterior urethra. The prophylactic treatment implies the eradication of the posterior urethritis.

During an acute attack, the patient should lie in bed and not be permitted to leave it until the inflammatory symptoms have subsided. He should lie preferably upon his back, and the scrotum should be firmly supported by a proper bandage. Constipation must be avoided by prescribing a mild laxative; the diet should be light and nourishing. It may be necessary in cases of severe pain to insert a rectal suppository containing a grain of Opium. Among the remedies which are of value are *Aconite*, *Belladonna* and *Pulsatilla*. Should these measures fail to promote resolution, and a rise of temperature associated with pelvic distress suggest abscess formation, evacuation is indicated. This may be accomplished by administering an anæsthetic, introducing a rectal speculum and emptying the contents of the seminal vesicles. The treatment of the chronic type differs materially from the acute, since the most prominent symptoms refer directly to interference with the sexual act. The restoration of this function, then, is the object to be achieved. This may be accomplished by stripping or milking the seminal vesicles, a method popularized by Fuller.

"The patient, presenting himself with a full bladder, should, while standing with his knees straight, bend the body forward at right angles, then the operator should introduce the forefinger of one hand well into the rectum, with the fist of the other hand exercising firm counter-pressure

over the pubes." By these means the body of the vesicles may be felt, the contents may be expressed by firm pressure along the line of the vesicle. Occasionally, the examination is attended with difficulty, particularly in men who have a protuberant abdomen and a rigid perinæum. The normal vesicle should impart a sensation of elasticity. When diseased they are firm, hard and distended; the spaces between them may be swollen, or, because of lost tone, the vesicular walls may be relaxed. Pressure upon inflamed vesicles causes a sharp, sickening pain, and a flow of pus from the urethra. Moderate pressure should then be exerted upon these sacs. This is followed by decidedly beneficial results, since it serves to restore tone not only to the vesicles but also to the surrounding tissues. During this treatment the pathological material is expressed from the seminal vesicles; severe pressure should be avoided, as in gravely diseased conditions hæmorrhage may result or an acute inflammation may be set up. Following this act, the urethra and bladder should be irrigated with a 1 : 4,000 solution of Nitrate of Silver, thus freeing the urethra of the expressed contents of the vesicles, and possibly preventing bladder infection. The stripping process is in some instances followed by pain, both local and reflex. Subsequent treatments should not be repeated until after all inflammatory changes have disappeared; this takes about five days. The average period of time required to effect a cure may be placed at from five to six months; in some aggravated cases even longer. In pot-bellied individuals it is almost impossible to reach the seminal vesicles. In such cases I have obtained fair results from passing a full-sized rectal bougie, or in those who have a tight sphincter ani, divulsion of that muscle is demanded. Where pronounced anæmia exists, it may be necessary to combine medicinal with local treatment. I have found *Strychnia phos.* and *Phosphorus* beneficial. Where tuberculosis complicates the condition, relief may only be obtained by surgical means. It must be remembered that such a procedure is rarely demanded in the gonorrhœal type.

Complications of Acute and Chronic Gonorrhœal Urethritis in the Male.

Balanitis and Balanoposthitis.—The foreskin should be retracted and the glans penis immersed in a very warm solution of 1 : 2,000 Potassium permanganate, after which it should be carefully dried and this dusting powder applied:

R Bismuthi Subnitratiss.
Amyli, ãã ʒss.
M.

This procedure should be repeated morning and evening until a cure is effected. Phimosis and œdema call for prolonged immersion in hot water. *Apis* should be given internally. If the œdema does not yield, then

multiple punctures or scarifications are indicated. Should these measures fail, then circumcision must be performed. Without this the urethra cannot be treated locally. Chronic balanitis calls for circumcision.

Paraphimosis.—Reduction is here indicated. The penis is grasped between the middle and forefingers of both hands, while the thumbs make firm pressure against the glans penis, thereby attempting to force the preputial hood over the glans penis. If this be ineffectual, then the constricting band must be severed; the reduction is then easily made.

Lymphangitis.

Swollen lymphatics disappear after urethral irrigations and the administration of *Aconite*, *Belladonna*, or *Apis*.

Lymphadenitis.

The same treatment is indicated as suggested for lymphangitis and, in addition, rest in bed, light diet, and a well-fitting spica of the groin. Threatened pus formation, is usually controlled by *Hepar*. It is rarely, if ever, necessary to resort to incision and drainage.

Folliculitis.

Inflammations of the minute follicles of the urethra are frequently very annoying. In the acute form, all local treatment must be suspended, and *Aconite*, *Pulsatilla*, or *Hehar* given. The penis should be immersed several times daily in a very warm antiseptic solution; a drop of carbolic acid or strong Nitrate of Silver may be injected into the follicle. Pus formation demands incision and evacuation. Diffuse cellulitis may occur, and in graver cases cause cavernous infiltration and abscess. Such complications interdict local urethral treatment. Fluctuation necessitates incision. Urinary infiltration and fistulæ are avoided by introducing an elastic catheter *a demure*. Chronic infiltrations may be absorbed by mercurial inunctions. Chronically inflamed follicles may be destroyed by the electrolytic needle.

Acute Cowperitis.

In this complication all local treatment is contra-indicated. Rest in bed is imperative and cold compresses should be applied to the perinæum. *Aconite*, *Belladonna* and *Hepar* are the remedies to be considered. Free incision and drainage are indicated in abscess formation.

Chronic Cowperitis frequently requires incision and subsequent packing with sterile gauze.

Acute Gonorrhœal Prostatitis.

Rest in bed is desirable, even in a mild attack of follicular prostatitis, because it may prevent the development of the diffuse form, or, indeed, of a peri-prostatic abscess. It is hardly necessary to restrict the diet of the

mildest type. In severe infections a moderate diet, preferably liquid, is desirable

In the beginning of an attack it is advisable to empty the bowels, as constipation and the subsequent passing of hardened fæces only aggravates the patient's suffering.

All local urethral measures are positively contra-indicated, exceptions, of course, being made to catheterization for urinary retention.

Fever, when present, may be controlled by *Aconite*; threatened pus formation calls for *Hepar*. When constitutional symptoms arise, as in the severe forms of infection, the totality of symptoms will at once suggest the remedy to an experienced prescriber. Internal remedies must be administered with the idea of subduing the pain, strangury, tenesmus and frequency of urination, as well as preventing urinary sepsis. For the former symptoms I know of nothing better than *Cantharis* or *Terebinth*. *Pulsatilla* must be thought of for its action in urinary metastasis.

Although I have deferred mentioning the treatment of prostatic conditions by way of the rectum, I have done so simply because it is through this avenue that our most brilliant results are obtained.

I cannot lay too much stress upon the value of *Ichthyol*. It is employed in the form of suppositories.

R Ichthyoli, ʒss.
 Ol. Theobromi, q. s.
 M. et ft. suppos. recti no. xii.
 Sig.—Insert one A.M. and P.M.

or

R Ext. Bellad., gr. ii.
 Pulv. Opii, gr. ii.
 Ol. Theobrom, q. s.
 Misce. et fiat suppos. recti no. xii.
 Sig.—Insert one A.M. and P.M.

Marked relief may be obtained by using daily one quart of water, as hot as the patient can bear, through the rectal psychrophore. Retention of urine demands catheterization.

Abscess formation necessitates perineal section and drainage.

Prostatic Abscess.

The only treatment for prostatic abscess is evacuation and drainage (through a median perineal incision) the moment pus is suspected or constitutional symptoms are present. This usually causes entire disappearance of the symptoms. Incision through the rectum, is sometimes permissible, but only when the tumor is so soft that it bulges almost into the anal orifice and is on the point of breaking down. Rectal incisions are dangerous because they invite fistulæ. Any attempt to rupture either by massage per rectum or by the introduction of a sound must be prohibited,

since such may cause insufficient drainage and re-infection. The technic is in the main that employed for perineal cystotomy. After the customary operating toilet, the patient is anæsthetized and placed in the lithotomy position. A grooved staff is passed into the bladder or as far as the obstruction, provided such prevents an instrument from entering the bladder, and held there by an assistant. The patient's legs are supported by assistants. The operator then makes an incision through the skin and deeper structures about three-fourths of an inch long, commencing about two inches above the anal margin. Care should be taken to make this incision exactly in the median line. Some prefer a curved perirectal incision or other special incisions for reaching the prostate, but the method herein advised is preferable, as will be seen by reading a description of its merits. The urethra is usually located, and when seen should be incised sufficiently to admit the second finger. The next step consists in over-stretching the sphincter and neck of the bladder. This may be done by inserting the forefinger into the wound and sweeping it around within the neck of the bladder, making firm pressure upon all of the parts. Incidentally, this may rupture the abscess, but if ineffectual, an incision should be made and the cavity thoroughly explored by the finger. After this the sphincter ani should be divulsed (since there is usually an associated congestion of the anal sphincter which is immediately relieved thereby), and the prostate gently massaged per rectum with a view of evacuating the pus. Additional incisions may have to be made for abscess opening either into the ischio-rectal fossa or involving the perinæum. Ordinarily, however, a median incision will suffice. After this the largest double drainage tube which the wound will admit is passed into the bladder and that organ is then irrigated with a saturated solution of Boracic Acid until the fluid returns clear, when the wound is packed with sterile gauze and the patient returned to bed. Recovery may be hastened by daily irrigating the bladder with a saturated solution of Boracic acid. The tube should not be removed, except to free from clots or because of rise of temperature, chill or cysto-spasms, until the fifth day. A sound is passed usually a week following the operation, and this sounding is continued every five days, until, and for some time after, the perineal wound is healed, thereby preventing formation of stricture. Recovery is very rapid; the urine clears, the cystitis, if any, disappears and the patient is cured.

Chronic Gonorrhœal Prostatitis.

There are certain therapeutic measures which apply to all types. Moderate sexual indulgence is more beneficial than otherwise, as it seems to relieve hyperæmia of the prostate by discharging some of its morbid products. The urine must be kept bland and unirritating, which will necessitate the abstaining from all articles of food that increase its specific

gravity, such as red meats, wines, liquors, cordials and strong coffee. Urinary asepsis can best be obtained by the administration of five grains of Urotropin after each meal. Moderate exercise, preferably walking, should be encouraged. Too vigorous exercise, overwork of any kind, mental or physical, must be positively interdicted. Patients must avoid taking cold. The most minute attention must be paid to the bowels; daily evacuations should be encouraged; constipation increases discomfort by causing pain during defecation, and also by inviting the migration of the bacillus coli. Neurotic conditions, when present, must receive appropriate treatment. *Strychnia*, *Iron*, *Arsenicum*, *Phosphorus* and *Nux vomica* constitute a group of well-indicated drugs. In highly nervous and excitable individuals *Bromide of Potassium* is invaluable, while *Selenium* is always to be considered when the genito-urinary organs are in a marked atonic condition.

For each type there are certain peculiar lines of treatment. Chronic inflammation of the prostatic urethra demands measures that will allay urinary and sexual symptoms. This can be obtained by pressure with Guyon's posterior dilatator and by endoscopic and instillation treatment.

A description of this instrument has been previously given. The dilatator is dusted with sufficient talcum powder to enable its sterile-rubber cover to slide on quite easily; it then is anointed with lubricene and passed very carefully into the bladder. Its wheel is then slowly and carefully turned until the patient experiences some distress. It should then be screwed down about two millimeters and the patient, who has been made comfortable by lying in a semi-recumbent position on an upholstered table, is instructed to hold the dilatator. The instrument is held in position three minutes, after which its branches are closed and it should then be most carefully withdrawn. The bladder should then be irrigated with a 1:6,000 solution of Nitrate of Silver, otherwise infection may follow. This procedure may be repeated every fifth day unless contra-indications, such as urinary fever or frequency of urination, develop.

I have spoken previously of the value of urethroscopic and instillation therapy in the treatment of chronic posterior inflammation. In this type it is unnecessary to resort to treatment by the rectum. In the chronic follicular type, while the same general line of urethral treatment is applicable, there are certain conditions which, if present, must be eradicated if we wish to ameliorate.

Chronic urethritis must receive appropriate treatment. It is here, as well as in the diffuse type, that the most brilliant results are obtained by massage directed through the rectum. To accomplish this, when irritability of the sphincter ani exists, it is necessary to resort to rectal divulsion, the indications for which I quote from the late Dr. R. W. Martin:

"The indications for divulsion of the sphincter ani are found in any

irritable condition of the muscle itself, any lesion of the mucosa in immediate contiguity to the sphincter, except prolapsus from a paretic state of the muscles, in a localized phlebitis of the hæmorrhoidal plexus or parts of it, partial or complete strangulation of the ano-rectal mucosa with its vessel; inflammations of adjacent organs, the deep urethra, prostate, perianal, and peri-rectal connective tissues, and of the peri-prostatic connective tissues from whatever cause. The results of proper divulsions are relief of strangulated vessels and nerves, restoration of the normal circulation to the parts, relief of the pain due to the inflammation, not only of the tissues involved, but also of the organs immediately adjacent, thorough removal of the venous stasis, and by aiding the limitations of any suppurative process that may have already been set up; and additionally it renders a subsequent local treatment of such tissues and organs as may have been involved in the inflammatory process much easier and infinitely less painful. The method of divulsion that I find productive of the most immediate and best results is that known as rapid divulsion. In my hands it is best done under influence of nitrous-oxide."

This treatment diminishes pain by allowing room for growth of the prostate and furnishes enough room for rectal examination. Too much stress cannot be laid upon the value of Ichthyol, locally applied, the directions for which have been outlined under acute prostatitis.

Massage of the prostate is one of the best therapeutic measures we have at our command. It is beneficial because it reduces congestion by expressing from the diseased organ its morbid products. It stimulates the tissues, increases circulation and causes an absorption of inflammatory exudate. The technic is the same as that employed for rectal examination for the prostate and vesicles. The finger, well lubricated, should exert firm pressure on each segment of the gland. It will be noticed, during the milking process, that a considerable amount of prostatic secretion and product of the seminal vesicles exudes from the meatus. The first seance should last about one minute. Each successive one may be prolonged until at times it may continue for about three minutes. It should be repeated about every four days. More frequent milkings are apt to cause local irritation. The operation is associated with some degree of pain. Indeed, I have several times observed patients become faint. Under such circumstances it is well to have the patient lie down upon the table in order to receive treatment. After massage he should urinate into test-tubes. In many this takes about five minutes; we can then inspect the urine and thus judge the amount of morbid material that has been expressed. Bladder irrigation should always follow, otherwise acute cystitis may develop. Bacteriuria frequently follows prostatic massage.

Rectal irrigations of very warm water are of benefit following this treatment, and are best administered by rectal psychrophore.

There are some cases, particularly of a chronic, diffuse type, some a combination of all types to which varying degrees of suppuration have been added, that fail to respond to any of these methods of treatment. Under such circumstances very good results may be obtained from perineal drainage. It is beneficial for the following reasons: As the patient is under a general anæsthetic it affords an opportunity to thoroughly massage the prostate, its appendages and the seminal vesicles, at the same time over-stretching the vesical neck. This, in a measure, relieves some of the urinary symptoms; also during operation small abscess cavities may be evacuated. By this means an avenue is afforded for drainage, so necessary to recovery. In chronic suppuration it may be advisable to attempt entire enucleation, and I have often cured by partial or complete prostatectomy. I have also, by means of the Bottini incisor, afforded amelioration in those cases associated with bladder contracture. The preparatory technic of the operation and the after-treatment differ but very little from my modification of Bottini's operation for hypertrophy.

Before resorting to excision of the seminal vesicles injections into the vas of Nitrate of Silver, 1 : 8,000, using from thirty to sixty minims at each sitting, must be tried. The technic is as follows:

The vas is held by the fingers against the skin of the scrotum near the median line, while a half curved needle is passed through the skin under the vas. A half-inch incision exposes the vas, a transverse or longitudinal incision into the vas opens the canal. The blunt needle of a hypodermic syringe can be passed into this minute canal, and a watery solution of any chosen agent injected; this liquid traverses the vas and ampulla and enters the seminal vesicles. A fine silk-worm gut suture is passed into the lumen of the canal at each extremity of the incision and out through the wall of the vas a quarter of an inch or more distant; one suture end is then passed through the skin and the two ends tied loosely outside. This suture, entering the lumen of the proximal end, serves to guide the needle when daily injections are to be made. When restoration of the canal is desired, the silk-worm suture is tightened so as to oppose the cut ends; when the wound is healed the suture is removed. Restoration of the lumen of an occluded vas is accomplished by excising the occluded portion and suturing the divided ends in the same way; the lumen of the vas is maintained during healing by the thread within it.

Gonorrhœal Cystitis

Will be discussed under the heading of Cystitis.

Cystitis.

Prophylaxis plays a very important rôle in the treatment of cystitis. Since it has been proven that infection usually occurs through the lower

urinary channel, it is imperative to bring to a rapid termination any urethral disease. Cystitis is so often caused by the introduction of unclean instruments, that a few suggestions concerning their use are submitted.

Sterilizations of Catheters.—1. Scrub all catheters with warm water and soap, and cleanse afterwards by allowing warm water to flow through them; then place in a sterilizer.

The sterilizer which I employ is of very simple construction. It consists of a one-quart graniteware kettle, with a cover. Inside this kettle is a metal tray, the bottom of which rests about two inches above that of the kettle. The tray is constructed as follows: It consists of a heavy cast-iron base, a rim of thin sheet metal, pierced by holes to allow the free circulation of steam and water, a cover, and a wire handle to remove the tray from the kettle. The centre of the base is pierced by five small holes, in which are inserted five nozzles, over which the open ends of the catheters are applied. The catheters are then coiled around the bottom of the tray. About a pint of water is then placed in the kettle and the covered tray is introduced; then the cover is placed over the kettle. As the water boils, steam and hot water are forced through the catheters, thus effectually sterilizing them.

After sterilization the catheters are placed in a sterile air-tight jar. The one I use is sixteen inches high by three and a quarter inches in diameter. In the bottom of this jar I place two ounces of a 2 per cent. solution of Formalin. The catheters are now ready for use.

No catheter, after being removed, should be returned to the jar unless subjected to this process of sterilization.

A catheter that is very flexible or slightly cracked, or that has been in daily use for over two weeks, should be thrown away. The above applies only to soft-rubber catheters.

All sounds and metal catheters should be washed in warm water and soap, and should then be placed in an ordinary sterilizing tray and boiled for three minutes, or they may be flamed off in alcohol. After this they are ready for use.

Mercier and ureteral catheters must not be subjected to such measures, since it would ruin them. They must be wrapped up in sterilized cheese cloth or linen, and subjected for an hour to steam sterilization or formalin vapor for several hours, after which they must be separately wrapped in gauze; they are then ready to use.

Before introducing any instrument into the urethra, the prepuce and penis should be washed with soap and warm water.

The treatment of cystitis calls first for removal of the cause, and then the control of inflammation. In calculous cystitis it is advisable to defer the removal of the cause until the inflammation has subsided. In cystitis due to dis-
inflammation the removal of the cause is practically

impossible. All that can be done is to palliate. The cystitis caused by a surgical kidney calls for renal lavage through the ureteral catheter, nephrotomy, or nephrectomy. Gonorrhœal cystitis requires the removal of its cause.

Retention of urine demands immediate operation, either by catheterization, perineal or suprapubic cystotomy. Strictures should be dilated or cut, although dilatation should be discarded in favor of urethrotomy where cystitis is aggravated by such treatment. Hypertrophy of the prostate—one of the most prolific causes of cystitis—should receive appropriate treatment. The treatment of cystitis is largely surgical, although medical treatment is indispensable in the majority of cases. The diet should be nourishing but light. Alcohol should be positively interdicted. Pain is an annoying feature, and may be relieved by applying hot stupes to the suprapubic region. In many cases, however, an anodyne may have to be administered. This may be given in the form of a one-grain opium suppository, which is inserted into the rectum. Hot sitz-baths may be taken frequently. The remedies that have proven most effectual in acute cases are *Terebinth*, *Cantharis*, *Aconite*, and *Belladonna*.

The balsams, especially *Sandal-wood oil*, are quite popular in acute cystitis, but I have yet to be convinced of their superiority over the homœopathic remedies. Even Freudenberg, Morton, and others laud highly the value of *Cantharis* in minute doses. Urotropin is of decided value in inhibiting the growth of micro-organisms, especially where ammoniacal decomposition of urine exists. When given in doses of over thirty grains a day it produces an aggravation of the symptoms.

Diarrhœa or constipation, if present, should be corrected, since they cause congestion and favor the migration of the colon bacillus, which is so prevalent in the intestinal tract. I am opposed to local treatment of any kind in acute cases, since such usually aggravates. In chronic cystitis, however, treatment is largely local and surgical, although I have obtained excellent results from *Kali bichromicum*, *Argentum nitricum*, *Sulphur*, and *Urotropin*, in conjunction with these measures. The bladder must be emptied and kept clear of septic products. In cystitis independent of obstruction, where the septic organisms multiply more rapidly than they are carried away, their growth must be checked by local treatment. This can sometimes be accomplished by instillation or intra-vesical irrigation. Instillation is performed by means of a suitable syringe, depositing upon the neck of the bladder five drops of a 2 per cent. solution of Nitrate of Silver. It has the disadvantage of causing some inflammatory reaction, which, however, subsides after the first urination. This I repeat every four days. This method possesses the advantage of depositing a concentrated solution upon the diseased surface. Intra-vesical irrigation is more efficacious because :

1. It brings an antiseptic in contact with every portion of the bladder mucous membrane.
2. It relieves congestion.
3. It may be practiced daily.
4. It washes the diseased epithelium and micro-organisms from the bladder.
5. In the absence of obstructive disease the bladder may be readily flushed without the use of a catheter, thus doing away with one of the chief causes of infection.

The flow of fluid from an ordinary fountain-syringe suspended at nine feet is sufficient to overcome the resistance offered by the compressor muscle. Of course, this method is not indicated in bladder paralysis. Here it is better to use a soft-rubber catheter and a hand syringe. I usually inject four ounces of any of these antiseptics: A saturated solution of Boracic acid; 1:4,000 Potassium Permanganate, 1:20,000 Bichloride of Mercury, 1:4,000 Nitrate of Silver. If the bladder cannot empty itself we must resort first to catheterization, and if this fails it must be opened and drained by the perinæum or above the pubes.

The cystoscope should be employed before resorting to surgical measures, as it not only locates diseased areas, but permits of proper measures, both local and surgical, being instituted. Thus, ulcers may be located and treated by solutions of Nitrate of Silver, grains ten to the ounce, or they may be curetted, or by means of the Bransford Lewis operating cystoscope, small calculi and tumors may be successfully removed. This obviates the necessity for major surgical interference. Barring topographical conditions, the treatment of bladder inflammations in the female is about identical with that in the male. The surgical treatment of cystitis in the female calls for colpocystotomy.

Pyelitis.

Acute gonorrhœal pyelitis, although a rare condition, occasionally occurs. The very acute phases demand rest in bed, light diet, free purgation, and high saline enemata. Bland waters, such as Poland, should be liberally partaken of. Urotropin is here decidedly indicated, and should be given in its maximum dose. *Aconite* or *Pulsatilla* may also be prescribed. Threatened pus formation or very active congestion are best combated by splitting the capsule of the kidney, as suggested by Reginald Harrison. It may even be done on both kidneys at one sitting.

Chronic pyelitis of gonorrhœal origin, in addition to diet and Urotropin, frequently yields to lavage of the renal pelvis through the urethral catheter. The solution which I employ is 1:8,000 Nitrate of Silver, repeated every five days. I have seen wonderful results follow such measures.

Gonorrhœa in the Female.

It is not within the province of the urologist to outline extensively the treatment of gonorrhœa and its complications in the female, as he is usually consulted for its acute manifestations or for its chronic urinary features. The treatment of gonorrhœa of the uterus and its adnexa should be discussed by the gynæcologist. The dietetic, prophylactic and medicinal treatment is identical with that suggested for the male, exceptions being made for topographical differences. Authorities differ as to the treatment of acute gonorrhœal urethritis (the most frequent manifestation of acute gonorrhœa in the female). Many contending, among them Kelly, D. B. James and his clinical associates, that local treatment to the urethra in the florid stage is distinctly contra-indicated. It is deferred to the chronic stage. Others, among them many of the European clinicians, and in this country Valentine, advocate local anti-gonorrhœic treatment. I am inclined to agree with them, because

1. Where local treatments have been omitted, cystitis has usually followed, showing extension of the gonorrhœa by continuity.
2. Cystoscopic examinations of those giving a history of gonorrhœal urethritis not treated locally show evidences of gonorrhœal trigonitis.
3. Destruction of gonococci may prevent these conditions.

Although cases are treated at the office and dispensary an ideal plan is to have them rest in bed until the acuity of the inflammatory symptoms is over. For urethral irrigations a fountain syringe will answer, but it is my custom to employ the Valentine apparatus. The urethral meatus and vulva must be cleansed, and the urethra gently irrigated with Protargol. This procedure must be carried out daily until the stage of decline. If pain or tenesmus be great, the following is indicated :

Opium,	gr. j.
Belladonna,	g. ʒ.
Ol. Theobrom., q. s.	
M. Et. ft. suppos. recti no. 12.	
Sig.—One night and morning.	

The genitals should be bathed in Lead water and Laudanum, and several hot sitz-baths taken daily. A sanitary napkin serves to catch the discharge. With the subsidence of the acute stage irrigations may be stopped, and instillations of Silver nitrate, $\frac{1}{2}$ to 5 per cent., made every few days to the urethra, or instillations of Ichthyol in Glycerin, $\frac{1}{10}$, are of service. A male meatus sound should be introduced within the urethra every five days. Such distends the urethral folds and evacuates the contents of the glands.

Complication of Acute Urethritis in the Female.

Abscess formation in any of the follicles, unless ruptured without the intervention of art, should be treated on general surgical principles.

Chronic Urethritis.

In the diffuse type, where there is a marked involvement of Skene's Glands, much good will result from emptying them daily by gentle massage. If they be markedly involved and much thickening exists around them, they should be slit open and cauterized with Nitrate of Silver, or they may be excised. Urethroscopy will expose the areas of granular urethritis. These may be treated by applying 4 per cent. solution of Nitrate of Silver every few days, the strength of the Silver may be increased. Sounds are of use and should be occasionally employed.

Acute Gonorrhœal Vaginitis.

Considerable diversity of opinion exists as to the frequency of gonorrhœal vaginitis. It is usually secondary to cervicitis or a urethritis, although when present it calls for active treatment, otherwise recurrent vaginitis is the rule. Its cure may be dependent upon the cure of a urethritis or a cervicitis. The discharge is best controlled by vaginal irrigations with Protargol, Potassium permanganate, or Bichloride of Mercury. The ordinary fountain syringe will answer. Injections should be taken morning and evening, the patient being in a recumbent posture. Chase recommends vaginal douches of Lysol, 1 drachm to 2 quarts, used every three hours during the day, and once during the night. After each douching, a strip of gauze, saturated with Picrate of Silver, one part to eight of Glycerin, is placed in the vagina, thus keeping the inflamed surfaces apart. This treatment is continued until the acute symptoms have subsided and the discharge is controlled. A thin acrid discharge calls for irrigations with astringents. Kelly recommends Tannin, 10-30 to 1,000; Acetate of Lead, 1-5 to 1,000; Alum, 10-25 to 1,000 or alkaline douches of lime water. Tampons of Ichthyol, 10 per cent., or Boracic, 20 per cent., or Alum, 2 per cent. may be added to Glycerin, and inserted into the vagina.

Ulcerated lesions are best treated by direct applications of the stronger Nitrate of Silver solutions. The treatment of chronic vaginitis is a problem for the gynæcologist.

Abscess of Bartholin's Glands.

Either labium may become the seat of abscess of the vulvo-vagina glands; unless opened, they rupture spontaneously. The treatment consists in shaving the parts and freely incising the tumors from below upwards. The sac is then wiped clean, and pure Carbolic acid applied. The

cavity of the sac is then loosely packed with sterile gauze. Redressings should be made every other day. Small circumscribed nodules call for excision.

Acute Gonorrhœal Cervicitis.

Dr. D. B. James says : " In acute involvement of the endometrium, I believe we should not attempt any active intra-uterine interference for fear of hastening extension, and thereby destroying the chances of the few cases that may go to spontaneous recovery."

Acute Gonorrhœal Cystitis.

The writer's views have been freely given under the article on cystitis.

Chronic Gonorrhœal Cystitis.

The internal remedies indicated are *Cantharis*, *Belladonna*, *Aconite*, Fluid ext. of *Zea Mais*, half teaspoonful doses. Flaxseed tea is beneficial and soothing. The diet should be bland. Urotropin may be given in small doses. The value of intra-vesical irrigations and instillations have been already discussed.

Areas of chronic gonorrhœal cystitis which are usually confined to the trigone and around ureteral orifices may be topically treated through the cystoscope. A straight vision cystoscope is a satisfactory instrument to use here. Nitrate of Silver, 1 to 5 grains to the ounce, is the most satisfactory medicament ; it may be employed twice weekly.

The value of Colpocystotomy for chronic gonorrhœal cystitis is questionable. It is, however, occasionally necessary. Irritability of the sphincter vesicæ may be relieved, if not controlled, by divulsion under general anæsthesia, with the finger or preferably with Kollmann's Anterior Dilator.

The treatment of chronic ureteritis and pyelitis is the same as in the male.

Extra-genital and Metastatic Gonorrhœa.

Gonorrhœal arthritis is the commonest and most serious expression of gonorrhœal metastasis. The majority of cases exhibit involvement of the knee joint, this usually yielding to the proper treatment. It is my custom here to direct treatment to the posterior urethra, prostate and seminal vesicles, since it has been proven that involvement of these organs is frequently the point of departure for elimination of the gonorrhœal toxins. (Rarely does one observe gonorrhœal rheumatism unassociated with posterior urethritis.) Patients are immediately placed on posterior irrigations of Protargol, Nitrate of Silver, or Permanganate of Potash. These should be given morning and evening. Frequently in acute cases this is all that is necessary. In many instances I have effected a cure without applying anything locally to the joint or giving a single dose of medicine. I could cite many cases in which a cure resulted within a few weeks from such

treatment alone. Many cases, however, demand a combination of internal and local treatment. Among the remedies that are of value may be mentioned *Pulsatilla*, *Biniiodide of Mercury*, *Iodide of Potash*, *Bryonia*, *Rhus tox.*, *Apis*, and *Aconite*. Rest of the joint is necessary; it may be immobilized by a proper splint and bandage. Not infrequently suppuration ensues. Under such circumstances the joint must be incised, irrigated, drained, and treated as any other infected focus. Suppuration may not ensue, yet the joint remain chronically inflamed; here it is best to continue irrigations and to direct local treatment to the prostate and seminal vesicles. I have obtained very satisfactory results in chronic joint involvement by strapping the prostate and seminal vesicles every few days and irrigating the posterior urethra daily. Fuller, who has had much experience with gonorrhœal rheumatism, adopts these measures, and in the event of their failure drains the seminal vesicles by means of a Kraske incision. While I am in sympathy with this plan, to effect such by a Kraske is, I think, subjecting the patient to too great a risk. They may be just as effectively drained by the perineal route. Fuller reports remarkably good results in those who have been long bedridden by means of this operation of seminal vesiculotomy. Of course, such should be practiced only when the patient will not recover under the measures previously outlined. Blistering is sometimes practiced with a view of causing an absorption of the effusion in the joint. An ointment of Ichthyol, 5 per cent. in Lanolin, frequently causes absorption; a tight, elastic or rubber bandage is servicable.

When the muscle tendons and bursæ are chronically inflamed (if the effusion in the joint has become absorbed) massage is of value.

Acute Polyarticular Gonorrhœal Rheumatism.

Cases resembling ordinary rheumatism must be treated as rheumatic fever by rest in bed, light diet, rest of the affected joints and the indicated remedies. Here, as in all cases, irrigations should be practiced and attention paid to the prostate and seminal vesicles.

Rectal Gonorrhœa.

One occasionally meets with this variety of extra-genital gonorrhœa. It may result following rupture of a prostatic and vesicular abscess; in women, from the vaginal discharge or from perverted sexual practice. Very frequently irrigations of a Protargol solution, or of Silver nitrate, or Potassium permanganate are indicated to control the discharge and kill the gonococci. Astringent injections of Tannin or Alum may have to be employed. Pain may be controlled by means of hot sitz-baths several times daily, or by Opium and Belladonna suppositories. An acute dermatitis demands soothing and astringent dusting powders or Zinc oxide ointment. Prolapsus ani or an irritability of the sphincter necessitates divulsion. This

relieves the pain of anal fissure or excoriations, if present. Fissures and ulcers may be touched with Nitrate of silver. Vegetations or condylomata must be snipped off and their base touched with Nitrate of silver.

Gonorrhœa of the Mouth calls for astringents and anti-gonococcic mouth-washes. Obstinate lesions of the buccal mucous membrane must be touched with Silver nitrate.

Gonorrhœal Ophthalmia.

It is not within the sphere of the urologist to discuss the treatment of this condition. Its prevention, however, is largely within our control and has been mentioned under the hygienic treatment of acute specific urethritis. Its prevention and treatment in the newborn is a study for the obstetrician.

Septicæmia of Gonorrhœal Origin and Gonohæmia have been reported. While writing this article, I have under my observation a septic case, the point of departure of which was a specific urethritis. The treatment of these metastases must be given to one most interested in the special features presenting.

Tuberculosis Uro-Genitalis.

The prophylactic treatment of urethral tuberculosis as well as tubercular involvements of the lower urinary tract, if not indeed tuberculosis of the kidney and the ureters as well, suggests the prompt and thorough eradication of gonorrhœa and its sequelæ. In the light of recent bacterial investigations the ravages of the gonococci are frequently responsible for tubercular involvement of the uro-genital system; indeed, in many instances the gonococci and tubercle bacilli are found side by side. Where a tubercular focus is discovered and confined to one organ, as a kidney, prostate or epididymis, excision may stay the onward march of the disease and prevent infection in other parts of the system.

The hygienic and dietetic treatment of all forms of urinary and genital tuberculosis is identical with that prescribed for tuberculosis involving other organs and is often of paramount importance. Particular indications may be seen by referring to the article on general tuberculosis.

Tubercular Urethritis.

Tubercular involvement of the urethra, male or female, is a very rare condition; although seen in women, it is never primary. Local treatment, such as employed for gonorrhœal urethritis, especially the preparations of silver, seem to increase the discomfort. Instillations of Bichloride of Mercury, 1:6,000, may be of service; severe reaction often follows its use. Daily instillations of a 10 per cent. Iodoform and Glycerin emulsion may be employed. Localized ulcerations may be touched through the urethroscope with a 1 per cent. solution of Nitrate of Silver, but, as

before stated, aggravates. *Urotropin* may be given advantageously, but over fifteen grains three times a day will increase pain and tenesmus. *Creosote*, ten minims in capsules after meals, is of service as a constitutional remedy. *Belladonna* and *Cantharis* often diminishes vesical irritability. Curettage may be practiced. Abscesses and fistulæ make perineal incision and drainage necessary, although the result is usually unsatisfactory.

Tuberculosis of the Bladder.

The same internal and local remedies employed for tubercular posterior urethritis are applicable to bladder involvement, since these conditions usually coexist. *Creosote* and *Guaiacol* are of value. Ichthyol, likewise, may be given.

The internal remedies of value in cystitis are of little comfort to those who suffer from the tubercular variety. Here pain, strangury and frequency of urination demand Opium, either by mouth or in the form of rectal suppositories. *Belladonna* or even *Atropine* may be given to control vesical irritability.

Locally, Bichloride of Mercury is the remedial agent productive of the most good. Although used mostly by instillations, yet 1 : 50,000 may be used occasionally to thoroughly cleanse the bladder. Care must be taken not to distend the bladder for fear of producing too much reaction. I have occasionally found the daily injections of 20 per cent. Guaiacol carbonate in olive oil of value in relieving the pain and frequent urination. I use about one-half a drachm, depositing it through a soft-rubber catheter, allowing it to trickle about the trigone, the region mostly involved in tubercular cystitis. Great care must be used during intra-vesical manipulation, as instrumentation frequently serves to aggravate. Indeed, so much so that even cystoscopy should seldom be employed. The cystoscope may be used once for diagnosis, but as a therapeutic agent or as a means to compare the progress or retardation of the process its use must be discouraged. Considerable diversity of opinion exists as to the value of Tuberculine in injections, in vesical as well as in other forms of genito-urinary tuberculosis. Tuberculine T. R. is the preparation used. The injection is repeated when the reaction subsides, and the dose is increased whenever the quantity employed ceases to produce a reaction. I have seen some good results following its administration.

The recent work of Wright, of St. Mary's Hospital, London, upon the determination of the opsonic index of the patient and regulating the amount of lymph employed for the inoculation according to the separate findings, seems to have placed this method of treatment on a rational and scientific basis. According to his investigations the lack of success attending previous inoculations was due to the fact that the amount of tuberculin employed was much too large. While it is too early to pass final judg-

ment, his work upon the subject of general therapeutic inoculation of bacterial vaccine as applied to tuberculous infection is most convincing.

The following extract relates his experience with bladder tuberculosis :

"From some point of view more convincing, in others only less convincing, than the results obtained with lesions which are directly accessible to sight and touch, are the results obtained in connection with tubercular diseases of the genito-urinary system, in particular in the cases where these involve the bladder. We have in the fact that these cases are associated with distressing pain and frequency of micturition, and in the fact that the presence or absence of tubercle bacilli in the urine can here be determined by microscopic observation, the means of measuring success and failure.

"Case 1. The patient, a man, aged twenty, when first seen twelve months ago, was suffering from extreme frequency and looked worn with pain. He was only with difficulty able to draw himself upright, and could only with some distress climb upstairs. There were considerable swelling and tenderness in the prostate and back of the bladder, and the urine contained some blood and a large quantity of pus. Microscopical examination revealed tubercle bacilli in considerable numbers in the urine. Cultures showed that there was no other bacterial invasion. The patient had been previously treated with inoculations of new tuberculin, the doses having been increased by geometrical progression up to $\frac{1}{25}$ milligramme. After the inoculation of larger doses, the pain and frequency of micturition were greatly aggravated. After waiting till the immediate effects of the last inoculation had passed off, inoculation was recommenced with $\frac{1}{100}$ milligramme of new tuberculin. The tuberculo-opsonic index of the blood now stood at 0.62. After repeating the inoculation with $\frac{1}{100}$ milligramme at intervals of ten days, and then tentatively advancing to a dose of $\frac{1}{80}$ milligramme without achieving any sensible improvement in the opsonic index or clinical symptoms, the dose was reduced to $\frac{1}{800}$ milligramme. The inoculation of these doses at ten-day intervals was followed by steady and sustained improvement both in the opsonic power and clinical symptoms. There was also a marked diminution in the prostatic tumefaction.

"After the dose had been for a time increased to $\frac{1}{800}$ milligramme it was again reduced to $\frac{1}{700}$ milligramme. While the frequency of micturition and the prostatic swelling have been much abated and while the patient is practically free from pain, his urine still contains tubercle bacilli. His condition is, however, now such that he is able to hold his urine for two hours at a time, and capable of undertaking without fatigue a long day's shooting."

He thus summarizes the results obtained by therapeutic inoculation in cases of localized tuberculosis :

"In view of the very favorable and, what is almost important, uniformly successful results which can, as will have appeared, be obtained

even in the most intractable cases of localized tubercular infection by the therapeutic inoculation of tuberculin carried out under the safeguards explained above, and in view of the fact that not less favorable results can be obtained by the aid of the corresponding bacterial vaccines in the treatment of localized infections by other micro-organisms, I do not hesitate to contend that we have, in the power of raising the antibacterial power of the blood with respect to any invading microbe, out of all comparison the most available asset in medicine. I would, in view of this new asset in medicine, fain induce the surgeon to abate something from his conviction that extirpation and the application of antiseptics form any connection with bacterial infection the only possible means of cure; I would have the surgeon resort to extirpation only when the physician tells him that all other means have been exhausted; and I would have the physician assume everywhere the rôle of an immunisator; and I would have him defer handing over his patients to the surgeon until he has tried, in every case of localized bacterial infection which is unassociated with immediate risk of life, the therapeutic inoculation of the appropriate bacterial vaccine."

Surgical procedures are to be attempted only when confined to circumscribed areas. They consist in cystotomy, perineal or suprapubic with or without curettage of the diseased mucous membrane. It must be remembered that operation is usually followed by fistulæ, although an occasional good result follows. Bladder tuberculosis, resulting from kidney tuberculosis, frequently heals after removal of the affected kidney.

Tuberculosis of the Ureters.

The treatment of this condition implies the treatment of either vesical or kidney tuberculosis, its source of infection.

Tuberculosis of the Kidney.

Urotropin is of value, likewise *Creosote* and *Guaiacol carbonate*. Stimulants may be indicated. Pain must be relieved by narcotics. Chills and rise of temperature must be combated by *Aconite*, *Hepar*, and *Quinine*. If the disease be confined to one kidney and seen sufficiently early, removal of the diseased organ should be considered. Even here conservatism is frequently rewarded by a cessation of symptoms. Diet and hygiene often do a great deal for these cases, and many cures have been reported. Where, however, constant fever and pain are present when the perinephritic tissues are involved and ureteral drainage cannot be obtained, then nephrectomy is indicated, provided the other kidney or urinary organ or other organs are not involved. It is not, however, within the scope of this article to discuss at length the indications of surgical treatment.

Tubercular lesions of the penis and cutaneous covering of the scrotum

and the female genitalia call for surgical measures. Curettage of the ulcer and subsequent rubbings with Iodoform ointment should be tried. Where scraping is not advisable Balsam of Peru is indicated. Excision of the diseased areas may have to be practiced.

Tuberculosis of the Prostate.

More benefit is obtained from constitutional than local treatment. The local treatment of prostatic tuberculosis is the same as given for urethral tuberculosis. Occasionally, gentle prostatic massage is of value. Tubercular prostatitis is incurable; surgical measures may afford relief. I do not advise total enucleation, but am content with incision, curettement and drainage of the abscess cavity. I have occasionally seen relief following perineal cystotomy. It is always practiced at the risk of a fistula.

Tuberculosis of the Seminal Vesicles.

Locally, very little should be done. Stripping or massaging, methods of undoubted value in the non-tubercular forms, aggravate. It is only in exceptional cases that such measures do good. Should urinary symptoms arise, then the treatment advocated for vesical tuberculosis may be given. Abscess formation should be treated by incision and drainage. Extirpation may be necessary.

Tuberculosis of the Testicle and Epididymis.

The hygienic and medicinal treatment of tuberculosis of the testes and epididymis is as important and is followed by as good results as in tuberculosis of other organs. The local treatment, however, is usually of a surgical nature. Hydrocele, if present, should be tapped and a few drops of pure carbolic acid injected into the sac. Abscess must be freely opened and drained. Keyes advises epididymectomy as the operation of choice, unless there is hyperacute generalized epididymo-orchitis, or unless the testicle is destroyed by suppuration. This operation is beneficial, since slight testicular tuberculosis often heals spontaneously following it. It has a beneficial effect upon the general health and tuberculosis elsewhere. It should be done early. Castration must be resorted to in abscess of the testis and epididymis, removing as much of the vas on the affected side as possible.

The prompt eradication of gonorrhœal epididymitis is a prophylaxis against tubercular deposits in the testicle.

The Treatment of Prostatic Hypertrophy.

Although the treatment of prostatic hypertrophy is essentially surgical, the minute discussion of which is not within the scope of this article, yet there are cases which can and must be managed medicinally and by

mechanical means; otherwise, surgery will cause fatality or fail to relieve the symptoms. In support of this statement I need only mention those old and enfeebled men, worn out by years of constant suffering, whose very appearance argues against recovery from the shock attendant upon major surgical interference. Such men will probably live longer if their condition be treated by the catheter, intelligently employed. In atonic bladders, where the obstruction is great and the bladder tone is lost, removal of the gland will not cause the bladder to empty itself; here we must use the catheter. Again, where there is from four to eight ounces of residual urine, the catheter may be used for some time before "catheter-life" (by reason of cystitis) becomes no longer advisable. The catheter, too, may frequently be used advantageously by tying it in and allowing the bladder to drain (as well as to be irrigated) for several days or a week, removing it at times and reinserting another. The catheter must not be employed where its use causes a severe cystitis or where one cannot intelligently employ it; here, operation is imperative. Moreover, the catheter must not be used until the second stage of hypertrophy of the prostate or that of partial urinary retention, where there is more than two ounces of residual urine. Before this, much may be done, according to the character of the prostate, by sounds and massage, holding the condition under control possibly for a couple of years. It must be remembered that hypertrophy of the prostate does not occur suddenly, requiring immediate surgical interference, but it is of slow and gradual growth, and when seen does not then (except under certain circumstances), call for operation. Every prostatic passes through these stages:

1. Several attacks of congestion.
2. Partial retention.
3. Chronic congestion, and almost complete retention.

Acute retention may intervene at any time. In the first stage, much may be done by internal and mechanical treatment.

Diet, hygiene and medicine, too, play an important part. By moderation of diet, avoidance of cold, keeping the bowels open and, in acute urinary discomfort, taking internal remedies and daily hot sitz-baths, congestion may be relieved. Chronic congestion, too, may be relieved, as before stated, by sounds and massage. The catheter or operation is demanded in the second stage only. Should acute retention occur, such must be relieved either by the catheter (tying it in until the attack is over) or by supra-pubic or perineal puncture. Prostatectomy is not indicated under such circumstances, since it is not an emergency operation.

When Must We Operate?—Although I have attempted to outline the indications for non-operative treatment, I am, broadly speaking (observing the exceptions and indications previously given), inclined to advise operation when the symptoms persist after a fair and intelligent trial with the catheter and bladder irrigation.

When operation is made early, the bladder power is maintained and is easily emptied, nightly urination almost entirely disappearing.

What are the Reasons for Operating, and What are the Benefits Accruing from Such?—This implies a knowledge of the back-pressure effects on the bladder, ureters, and kidneys, since these organs become involved, either from obstruction or as a result of catheterization. It can readily be seen that the reduction or removal of the prostate provides for drainage and gives the bladder a rest. Septic products are thus removed and the chronic toxæmia likewise disappears.

Malignant Disease of the Prostate.

If recognized early and the subject be a man about fifty years of age, then a radical operation, namely enucleation of the prostate, together with the seminal vesicles and a flap of the bladder, may be of value. Unfortunately the operation is a formidable one. Later on, when the disease is far advanced, as evidenced by severe pain, dysuria and hemorrhages, Bottini's operation or my operation, namely, that of combining it with perineal drainage, may be practiced. I have occasionally made it with gratifying results. Meyer claims that it does away with the pain and dysuria. A rapid perineal section for drainage is a palliative measure of value in such cases. Continuous catheterization is not to be recommended, nor is the formation of a permanent perineal or supra-pubic fistula. Should these measures be declined the pain must be controlled by Opium, the cystitis by bladder irrigation, hemorrhages by Calcium chloride, grains ten, three times a day, or Ergot, and the case treated symptomatically.

Hypertrophy of the Bladder.

Since this condition is the result of a chronic obstruction to the outflow of urine, the treatment calls for removal of the cause.

Atrophy of the Bladder.

This rare condition is the result of excentric hypertrophy. It is incurable.

Atony of the Bladder.

This is common to old age, but often exists, too, as the result of obstructive conditions. It is cured entirely or partially by removing its cause.

Paralytic Bladder.

The treatment of partial or complete bladder paralysis consists in the institution of catheter life. The catheter must be used once in twenty-four hours for every four ounces of residual urine, twice for every eight ounces, three times for twelve ounces, and once more for every increase of two ounces.

The patient must be taught to use the catheter and how to irrigate his bladder. Even with its most skillful use chronic cystitis is inevitable. Tying in a catheter for a few days at a time, the patient meanwhile remain in bed, is oftentimes beneficial as it drains the bladder, thus relieving the foul cystitis.

Retention of Urine.

Acute retention of urine depending upon spasmodic stricture must be delt with first by hot sitz-baths. (*Apis* may be given internally.) The sound of running water frequently releases the spasm. Should these measures fail, a sound or a catheter passed beyond the compressor urethræ muscle will overcome the difficulty. Repeated attacks may be prevented by observing strict sexual hygiene, and correcting the urethral disorders.

Retention caused by urethral stricture, unless relieved by the catheter, calls for general anæsthesia and operative interference.

Retention depending upon prostatic hypertrophy necessitates the catheter. Acute retention suggests the palliative measures formerly outlined for retention from other causes. Usually, they are ineffectual and the catheter must be used. An attempt should be made first to pass a soft-rubber catheter; if this fails, a Mercier or a Bicoudé or a catheter containing a steel mandrin bent to an exaggerated curve, by holding it at the obstruction for a few minutes and then deflecting its handle towards the floor, at the same time making counter-pressure with the disengaged hand against the perinæum, always remembering to hug the roof of the urethra, it may be made to enter the bladder. It may be advisable to at once employ the full curved metal prostatic catheter, first distending the urethra with sterilized olive oil, to which has been added a 2 per cent. solution of Cocaine and 1 : 1,000 solution of Adrenalin chloride, such frequently overcomes the spasmodic condition of the urethra. The urine having been withdrawn, the catheter should be tied in until the acute congestion is relieved.

Following catheterization the bladder should be irrigated with 1 : 4,000 solution of Nitrate of Silver. This will usually prevent urinary fever. Should these means fail, supra-pubic aspiration is indicated. Repeated failure to pass the catheter calls for operative interference. Partial retention of urine dependent upon prostatic hypertrophy necessitates daily (if not oftener) use of the catheter.

Urinary Overflow.

This may be controlled by intelligent catheter life, or by tying in a catheter and irrigating the bladder daily. Usually, however, prostatectomy is indicated. A rubber urinal must be worn in the daytime to catch the overflow.

Incontinence of Urine.

Enuresis.—Involuntary overflow of urine is often met with in children; it may occur in daytime, but usually happens at night. The treatment is rather discouraging, inasmuch as it is often very difficult to find the cause, and to remove the same if found.

Careful hygienic measures are indicated. Fluids at bedtime should be restricted. A cold sponge bath should be given. The child should be awakened late at night and early in the morning to urinate. Frequently an inherited neurotic taint is responsible. Out-door life, good food and regulation of the bowels must be insisted upon. Sleeping on a hard mattress and elevation of the foot of the bed has been employed with good results. Attempts must be made to overcome masturbation, if practiced. Any abnormal condition of the anus must be corrected. Often penile and urethral defects as hypo- and epi-spadias, tight meatus, tight foreskin, balanitis, as well as stone of the bladder, and concentrated urine, demand appropriate treatment. The faradic current is often of service. Among the internal remedies are *Belladonna*, *Causticum*, *Cantharis*, *Rhus tox.*, and *Strychnine*. Enuresis usually disappears at puberty. Incontinence of urine in adults is rare, and when present the patient must wear a urinal. Such a condition sometimes follows bladder operations where the sphincter vesicæ has been cut, or from paralysis of that muscle.

Bacteriuria.

The prevention of bacteria in the urine and their elimination is not infrequently a difficult task, since such may require the cure of a catarrhal prostatitis, or a pyelo-nephritis; this condition, too, frequently follows typhoid, pregnancy, and measures adopted for the cure of stricture, prostatic enlargement, spermato-cystitis and cystitis.

When bacteria are caused by prostatitis, it is frequently difficult to remove them, as they are produced by attempts to cure prostatitis by massage of the prostate. Myriads of these bacteria show in the urine following such measures. Bacteria arising from pyelitis, calls for Urotropin, grains 10 three times a day; high saline enemata, too, are of occasional value. Lavage of the renal pelvis, using 1:8,000 solution of Nitrate of Silver, I have often tried with quite satisfactory results, employing this procedure weekly. Bacteria independent of cystitis yields but little if any to intra-vesical irrigations, but when associated with cystitis, bladder washings with Bichloride of Mercury, 1:20,000, are often of value. Pathological conditions of the urethra must be removed. When due to the colon bacillus, gastro-intestinal disorders must be corrected before a cure may be looked for. Too much stress cannot be laid upon the value of the various waters in the treatment of bacteriuria. The best are Poland and Buffalo

Lithia. Rain water, too, is of value. It is essential to partake of a light diet; meats and wines should be restricted. Internal remedies are frequently of value as urinary and intestinal antiseptics. The best in the order named are Urotropin, Salol and Methylene blue. From laboratory and clinical experiments, the practical therapeutics of bacteriuria may be formulated in the following statements:

1. Internal medication is clearly indicated both in the prophylaxis and the treatment of bacteriuria, and this quite independently of any effect it may have on the pyuria or symptoms.

2. The formalin-containing drugs are superior to the other two mentioned.

3. Internal medication acts essentially by preventing bacterial growth, and may therefore be expected to accomplish more by way of prevention than by way of cure.

4. In incipient bacteriuria without cystitis success from internal medication is the rule and failure the exception; in long-standing bacteriuria, and especially if cystitis be present, the reverse is true.

5. The efficacy of internal medication in bacteriuria varies not only with its duration and with the presence of accompanying cystitis, but is indefinitely conditioned also by the character of the invading organism. The prognosis is distinctly worse for staphylococcus and colon bacteriuria than for typhoid or streptococcic bacteriuria. Their presence in the urine, however, affect the constitution but little.

Urinary Fever.

Since the introduction of strict antiseptic measures into urological practice, urinary fever is no longer the terror of former years. Contemplated operations upon any part of the urinary organs, especially the urethra, demand a rigid asepsis. Since employing ureteral and bladder irrigations, subsequent to urethral manipulations, I have rarely observed urinary fever. I have also failed to observe it following urethral catheterization when I have irrigated the kidneys, pelvis and ureter. It is, however, within the experience of all surgeons that some form of urinary fever follows the first urination after perineal section.

Barring a sharp chill or chilliness lasting a few minutes, and a rise in temperature for a couple of hours, it means nothing. Its repetition, however, is serious, very serious. *Aconite* is the remedy to be given in acute urinary sepsis. I have yet to see the great value resulting from the administration of Quinine. *Camphoric acid* in fifteen gr. doses t. i. d. is both a prophylactic and a cure. The diet should be liquid. The bowels should be freely opened, and hot packs should be employed. Whisky and other stimulants may be indicated. Since urinary fever not infrequently arises from insufficient excretion of urea, an attempt to correct this is in order.

Chronic urinary fever is an entirely different problem. It is a serious and often fatal condition. It is dependent usually upon a badly damaged urinary canal, usually a very tight stricture with its back-telling results. Its treatment is then perhaps urethrotomy, cystotomy, prostatectomy, nephrotomy, or nephrectomy; as palliatives, Urotropin, light diet, plenty of bland water, and moderate exercise are indicated.

Spermatorrhœa.

The treatment of this symptom has been outlined under chronic seminal vesiculitis. Spermatorrhœa is not a disease, but a symptom of one, indicating catarrh or atony of the ejaculatory ducts. The mere presence of semen in the urine causes no physical harm, neither can semen appearing at the meatus after defecation do anything but disturb the patient's mental poise.

Prostatorrhœa.

The treatment is more fully described under Gonorrhœal Prostatitis. Applications of Nitrate of Silver, 1 per cent. solution, touching the Caput Gallinaginis through the urethroscope is often beneficial. The urethral psychrophore often acts as a local stimulant. The passage of a urethral sound frequently assists in restoring tone. Should the flow be traced to bicycle or horse-back riding, or to masturbation, or sexual excesses, a cure may result from their discontinuance.

Where urethorrhœa is present the following urethral injection is serviceable :

R Zinci Sulph., gr. ij.
 Liq. plumbi subacetat., ℥ij.
 M.

or

R Sol. Ext. fl. hydrastis non-alcoholic, 4 per cent.

Traumatic Urethritis.

The daily use of a catheter is responsible for a mild urethral discharge. Under such circumstances catheter life must be discontinued or the condition tolerated. Urethral irrigations may be of occasional value. Tying in a catheter always produces after a few days more or less discharge, especially in previously infected urethræ. Here withdrawal of the catheter and urethral irrigations are indicated.

Syphilitic Urethritis.

Occasionally a mucous patch in the urethra may produce a mild discharge. Silver Nitrate, 1 per cent. solution, applied through the urethroscope, may effect a cure.

Uric acid and diabetic urethritis and urethritis from excesses in food and drink call for proper preventive and dietetic measures. Internal remedies are alone indicated. Local measures are valueless. Constipation should be corrected.

Uric acid urethritis is relieved by appropriate internal remedies and liberal potations of bland water.

Non-specific Urethritis.

Urethral discharges failing to show Neisser's diplococci must be treated either internally or locally according to the organisms found. Most cases yield to a few irrigations of 1 : 20,000 Bichloride of Mercury.

Urethrorrhœa usually coexists with prostaticorrhœa, the treatment for which has been given.

Pseudo-gonococcic Urethritis.

Johnson describes such a variety presenting organisms resembling Neisser's diplococci. The symptoms arising from it must be treated symptomatically, usually by irrigations.

Acute Exacerbations of uncured gonorrhœas call for an exact diagnosis of the areas involved. Usually a posterior complication exists and its removal is indicated.

Impotency.

The restoration of a man's sexual powers to what he may consider a satisfactory condition is usually a difficult task, sometimes an impossible one. I know of nothing which makes so many demands upon the physician's skill. Young men of a timorous and imaginative temperament frequently ask for a remedy which will make them conduct themselves bravely upon attempted sexual intercourse. Old roués who have exhausted their sexual power beseech us for a quick and speedy return to their former vigor. Paralytics clamor for their lost manhood. It is not to be wondered at that the quacks and charlatans have reaped a financial harvest on these real and fancied sufferers.

To attempt to deal exhaustively with the treatment of these conditions would necessitate the discussion of this subject to the exclusion of all others. Men of high standing in our profession have made this study their life work. Sturges has written a masterful book and dedicated it to Sexual Cripples. Vecki has written exhaustively; Taylor, Fuller and others have labored earnestly toward a solution of this intricate problem. It will be my object to briefly outline the general treatment applicable to each type of impotency. When a patient presents himself for treatment, great pains must be taken to properly classify the type of the disease presented. A frank talk is then given him, explaining the length of time necessary to benefit him if such he can receive, as well as the possibilities of failure. He must be given to understand that advice must be strictly

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change

ual disability depending upon the pathological state or seminal vesicles or following lesions in

the nervous system, is far the commonest type encountered. One variety seen is the result of changes in the brain and cord, such as follows severe types of progressive myelitis, the advanced type of locomotor ataxia, and traumatism to the brain and spine. Here erections do not occur and normal ejaculations are absent. Treatment is here useless; the condition is irremediable. Habitués of alcohol, cocaine, and opium, as well as drugs taken with a view of producing erections, frequently have temporary impotency. Chronic alcoholism is especially productive of this condition. Treatment consists in correcting the habit which is responsible for the condition.

Impotency dependent upon stricture requires either dilatation or cutting for a cure. Those cases traceable to chronic inflammation of the posterior urethra, especially if associated with chronic gonorrhœa, demand treatment previously suggested. If resulting from non-specific inflammation, the result of coitus interruptus, masturbation or sexual excesses, than these habits must be corrected. Beneficial results follow the topical application of 4 per cent. solution of Copper sulphate in Glycerin through the urethroscope, applying the medicament directly upon the caput. This instrument serves the same purpose as a sound, and the solution subdues the inflammation and controls local irritability. It should be repeated every five days. The occasional use of the phychrophore is of value, as it allows very cold water to come into contact with the posterior urethra, thus acting as a local tonic.

If dependent upon chronic prostatitis and chronic seminal vesiculitis they must receive appropriate treatment.

Occasionally, one encounters a type of impotency where there is no demonstrable lesion of the sexual apparatus, or where there are no post-gonorrhœal changes or diseases of the nervous system. The condition is usually a purely functional neurosis. Here there exists an inhibition of the spinal centre of erection. Sexual desire may be entirely wanting; feeble erections only can be produced. The indications for treatment are, first, to insist upon the patient giving up all attempts at sexual intercourse. If married, he must sleep alone. This plan, if persisted in for several weeks, frequently produces a cure. An underlying or resulting neurasthenia must be corrected, as well as disorders of digestion and irregular habits of living. Sea bathing and a sea voyage are beneficial. Sea air is a powerful sexual stimulant. Local treatment to the urethra, prostate and seminal vesicles is not indicated, in fact such may do harm. Alternate hot and cold douches applied daily to the genitals are of occasional value. Electricity, too, is often employed. I have had good results following galvanism. Should this fail the faradic current may be employed. Mechanical devices are used to force blood into the corpora cavernosa, and thus increase temporarily the size of the penis. Such measures are harmful. Lydston and Taylor

suggest ligation of the dorsal vein of the penis. This, by preventing the return of the blood-current, distends the corpora. They have reported good results. Circumcision is often of value, since it increases local blood supply. The highly-praised Aphrodisiacs only act temporarily, and later are distinctly harmful. Among the remedies of value may be mentioned *Nux vomica*, *Selenium*, *Strychnine*, and *Phosphorus*.

Coitus may, too, be impossible by reason of congenital or acquired deformities. Desire is present but erection is impossible. Cysts or tumors of the penis must be removed. The varieties of epispadias and hypospadias must be corrected. Penile plaques or infiltration resulting from trauma or from syphilis demand attention. Some deformities are so exaggerated that restoration to the normal is difficult. Scrotal tumors, excessive hydrocele, hernia or elephantiasis are responsible.

Mental conditions, real and assumed, are often responsible for temporary impotency. Attempts at sexual intercourse may fail by reason of fear of discovery. The possibility of contracting venereal diseases or bashfulness or nervousness may interfere; unpleasant odors, uncongenial surroundings may be responsible. Mental overwork not infrequently causes temporary impotency. In time, these conditions right themselves, usually by suggestive therapy.

Sterility.

The treatment of Azoospermia is difficult. A temporary condition may exist in those who practice excessive sexual intercourse. But sexual rest for a while restores the fructifying properties of the semen; debility following fevers may produce the condition temporarily. Where due to absence of testes the condition is hopeless. When atrophy of the testes exists little can be hoped for. The same is true of Crypt-orchidism. When resulting from blocked vasæ deferentiæ (due usually to gonorrhœal epididymitis) attempts must be made to cause a resolution of the infiltrate. Little can be done for sterility resulting from tubercular epididymitis. Syphilitic epididymitis may be treated successfully by giving antisyphilitic treatment. This melts the deposit and allows the passage of the semen. Constant exposure to the X-rays is supposed to be responsible for this condition. Their influence has been exhaustively studied by Dr. Tilden Brown.

Sterility, too, may result from inability to deposit the semen within the vagina. Abnormalities of the frænum may cause it, and such will have to be corrected, as well as stripping the frænum, correcting complete phimosis, enlarging a pin-point meatus, dilating or cutting urethral strictures (a most potent cause), correcting congenital deformities (as epi- and hypospadias), removing penile or scrotal tumors. Where one or both ejaculatory ducts have become occluded, the treatment is unsatisfactory. Such may result from perineal operations.

Oligozoospermia.

A marked diminution in the number of spermatozoa is usually a temporary condition which may progress to a condition of azoospermia. Its treatment we have given. Sterility caused by dead spermatozoa calls for the successful treatment of its cause. Very often a chronic seminal vesiculitis and prostatitis of gonorrhœal origin is responsible.

Tubercular and syphilitic testes as well as the malignant growths should receive their proper treatment.

CHAPTER XIX.

DISEASES OF THE BLOOD AND DUCTLESS GLANDS.

Chlorosis.

ETIOLOGICAL factors do not seem to give us many suggestions in the treatment of chlorosis. The disease occurs in all sorts of surroundings, some hygienic, and others just the reverse. The worst cases I have ever seen have been among the mountains of New York and New Hampshire, the victims being native girls, who had the best of air and food, and were in nowise hampered by mental anxiety. Notwithstanding such cases which go counter to the general teaching on the subject, the beneficial influence of mental rest and the bad effects of over-application to study, and the value of fresh air must be acknowledged as of some use in obtaining successful results; but we must not place too much reliance upon them. It is customary to find authorities generally recommending that the patient take mild exercise always; more severe exercise when strength will permit. Such advice savors strongly of adherence to tradition rather than the possession of common sense. In the majority of cases of chlorosis there is some fatty degeneration of the heart muscle; in severe cases this change may be extreme. This cardiac condition in conjunction with the deficient hæmoglobin accounts for the patient's dyspnœa under any exertion. It not infrequently happens that the fatty degeneration is associated with some dilatation. Let me ask, is it according to the dictates of common sense to order such patients to exercise in the open air? Is it not wiser to place such patients in a well-ventilated room, and away from all causes of mental and physical exertion? Those of us who have been accustomed to trying the rest treatment feel that we cure our patients more rapidly than if we compelled them to follow the orthodox course of active exercise.

The diet should be highly nutritious. The patient should be fed nitrogenous foods and easily digested fats, and it is a good plan to order light lunches between the principal meals. Such a regimen is by no means always practicable, because of the existing dyspeptic conditions, and the patient's aversion to fats and animal foods generally. Under such circumstances, we must rest satisfied with doing our best in the way of feeding, while with medicinal measures we control the anæmia and improve the digestive functions.

Most chlorotic subjects are constipated. This has led to the theory that this condition is a very important factor in causing the disease. While

facts are against such an assumption, we do know that the patient derives great benefit from the maintenance of regular bowel action. Whenever possible this should be secured through hygienic means, but if these fail, no time should be lost in resorting to an efficient laxative, *Cascara* being by all odds the best. It should be administered in doses just sufficient to provoke one easy full-sized stool daily.

Ferrum in its various forms is so highly efficient in the treatment of chlorosis that it has been called a specific for the disease. There has been much discussion as to its mode of action. Hughes* states that "iron probably hinders the formation of blood in health, and certainly promotes it in disease in the same manner in which other drugs affect the nutritive functions." "It may thus be given for chlorosis in small doses as a homœopathic remedy, and should always be so administered in the first instance." "Iron is also a food to the blood, and should be given as such unless improvement rapidly occurs as a medicine."

Later, Hughes† announces his continued belief in these statements, and quotes Nothnagel and Rossbach to prove the ability of iron to produce anæmic conditions in the healthy. "On the other hand, the thought of iron as a food does not commend itself more to the mind as the facts grow upon us, as the total amount of iron in the blood, according to Baruch, is but 15.48 grains, and in the worst forms of anæmia the amount of iron lost is but 3.4 grains, which quantity can be furnished by a single pound of good beef." And yet our author apparently admits that iron may be a food after all. He admits that he has found it advisable in a number of instances to give it in material doses, and then says: "By so thinking and acting, I seem to be doing most justice to my patients; while having the comfort of feeling that the value of iron in anæmia constitutes no exception to the homœopathic law, it being mainly a matter of dietetics, with which similia similibus has no concern." Finally, he quotes Hahnemann, as follows: "What iron contributes as a *chemical* remedy in such cases to the increase of the necessary quantity of iron in the blood is an altogether different question, which has nothing to do with the subject of homœopathic cure by similarly acting medicines."

Numerous other theories have been promulgated to explain the action of iron, thus far without arriving at any conclusions more satisfactory than those offered by Hughes. They deserve credit for their ingenuity. The practical fact still remains that iron acts in a most marvelous manner in the cure of chlorosis. It is true that it does not work a cure for all time, and that recurrences sometimes take place; but such is the history of many other remedies in their application to disease, and constitutes no reason why we should discard an invaluable help.

* *Pharmacodynamics*.

† *Principles and Practice of Homœopathy*, p. 314.

In the beginning it is well to follow Hughes's advice, and administer iron as *Ferrum redactum* in the first decimal or in small doses of the crude substance. If improvement is not prompt, as shown by repeated examination with the hæmoglobinometer, we should resort to larger and larger doses. When compelled to the latter course, as is frequently the case, the iron is best administered in the form of Bland's pill, dose of which may be increased to as many as fifteen pills daily with no result other than good. There is abundant testimony to show that this preparation acts much more satisfactorily when freshly prepared than when it has been kept in stock for some time. Rather than administer an inefficient preparation, it is better to give iron reduced by hydrogen (*Ferrum redactum*), in increasing doses. Goodno * quotes from the pathogenesis symptoms to show the applicability of the drug to the typical case of chlorosis. "We may note especially the pale waxen or earthy hue to the skin, sudden flushing of the cheeks, under slight excitement, gastralgia, heavy pressure in the epigastrium, pallor of the mucous membranes, aversion to meat, profuse menstruation, general chilly feelings, palpitation of the heart, œdema of the feet, throbbing of the bloodvessels all over the body, headaches, and vertigo." Forchheimer objects to giving iron in cases attended by menorrhagia, and suggests that when this symptom obtains the drug should be administered only between the menstrual periods.†

Iron must not be regarded as an infallible remedy in chlorosis, notwithstanding the brilliant results following its use in the majority of cases. Occasionally we are obliged to resort to other medicines, sometimes to aid its action, and sometimes to supplant it altogether. The remedy adapted to the largest number of cases next to Iron is *Pulsatilla*. The patient presents a pale and puffy face; sensation of confusion in the head; putrid taste in mouth; disgust for food; absence of thirst; leucorrhœa; amenorrhœa; œdema of the feet.

Graphites is indicated mainly on the condition of the skin, which is dry and harsh, with absence of perspiration; pimples appear on the face during the menstrual period, the flow being delayed and scanty. The bowels are obstinately constipated. The principal vascular symptom is a rush of blood to the head attended by flushing of the face. Leucorrhœa, when present, is profuse, watery and excoriating.

Ignatia finds its sphere of utility in cases presenting nervous symptoms. The patient is sensitive and hysterical. Emotional factors seem to have an important bearing in the production of the *Ignatia* case.

Platinum is likewise adapted to cases presenting a strong neurotic element. The nervous condition is one of extreme irritability with melancholia. Amenorrhœa or painful and profuse menstruation.

* *Practice of Medicine*, vol. ii, p. 794.

† *Prophylaxis and Treatment of Internal Disease*.

Helonias is suggested by the pelvic condition, which is one of atony, and which is in keeping with the patient's general condition. There may be actual prolapsus. The mental condition is one of dulness and inactivity.

Cyclamen is adapted to cases very similar in their features to those calling for *Pulsatilla*. The patient presents decided mental and physical debility or torpidity. Their symptoms are relieved if they are forced to exert themselves. On waking in the morning their languor is pronounced, but after getting up and working around for a time they feel tolerably well.

Pernicious Anæmia.

Although the ultimate outlook for the patient with pernicious anæmia is highly unfavorable, nevertheless much can be done to bring about improvement and give the sufferer great comfort. During the periods of aggravation, and until improvement has become well advanced, the patient must be kept in bed and at absolute rest. It is in this particular that so many fail, because patients will persist in going about until no longer able to do so. The sick-room should have the advantage of good ventilation and plenty of sunlight.

Diet is to be regarded as useful only in a general sort of way. Nutrition is demanded, but as the patient is incapable of active assimilation, the articles administered must be light when the prostration is most profound. Milk, eggs, finely-chopped meats, well-prepared beef extracts, are the articles which the experience of most physicians prove to be valuable. Hunter in his work on pernicious anæmia advocates an exclusively farinaceous diet, on the ground "that in health a proteid diet causes more extensive destruction of corpuscular elements than a farinaceous one, and in this disease, on account of the putrefaction in the intestine, the blood destruction is increased by a nitrogenous diet." But practical experience does not bear out the theoretical danger of meats. When the patient has recovered sufficiently to be about, his diet should be made more generous, and it should be kept in mind that he is to eat for health and not for pleasure.

When hæmorrhages appear they must be treated on the ordinary principles involved; at the same time there should be no overzealous surgical procedures. Several times has it been my lot to see cases treated by repeated curettement under the supposition that it was a secondary phenomenon.

Of the remedies to be used in the treatment of pernicious anæmia, *Arsenic* is most certainly the one that has given the best results. Some authorities deny this, claiming in very positive terms that it is the nature of the disease to go through periods of remission of symptoms, and that Arsenic gets the credit which should be given to Dame Nature. Personally, I have seen the improvement follow closely upon the administration of

Arsenic so often that I am fully impressed with the beneficial effects of the drug. The administration of Arsenic in the treatment of pernicious anæmia was first suggested by Byrom Bramwell,* who based the prescription upon the following reasoning :

" I knew from pathological observation that in cases of pernicious anæmia the most striking naked-eye appearance was the extreme fatty degeneration of the heart. I further knew that Arsenic was a remedy of undoubted value in the treatment of many cases of fatty heart. I consequently said to myself, "Why not try the effect of Arsenic in pernicious anæmia?"

To this we would add that Arsenic in poisonous doses is capable of producing fatty degenerations and an anæmia by hæmolysis, therefore it should be homœopathic to pernicious anæmia.

To obtain the best results, Arsenic must be given in material doses. At the beginning, two to three drops of Fowler's solution should be prescribed three times daily after meals, and well diluted. On alternate days the dose is increased by one drop, until at the end of twenty-five days he is taking fifteen drops three times daily. When the patient cannot tolerate this rate of increase, as is frequently the case, let it may be made every third or even fourth day. But it must be remembered, that the good results depend upon giving the patient the maximum quantity of the drug he can tolerate. The unpleasant results arising from too large doses or too long continuance of the drug, include pigmentation of the skin, puffiness beneath the eyes, peripheral neuritis. Many of the patients exhibit a remarkable tolerance, and these, in my experience, constitute the great majority of the cases. When improvement appears, as it usually does, the drug should be continued for sometime afterwards, but in greatly decreased doses, say five minims three times daily.

Other remedies that have been recommended are *Phosphorus*, *Cinchona*, *Clininum arsenicosum*, *Picric acid*, *Zinc picrate*, *Sulphur*, and *Plumbum*. The recent discovery that *Acetanilid* is capable of producing changes in the blood similar to those of pernicious anæmia, suggests a trial of that drug in small doses.

Fraser,† of Edinburg, reported a case treated by the administration of an extract of bone-marrow. His good result in that case has led numerous others to try the various preparations of that substance. The experience of most is like mine, very largely negative. Still, it is not unlikely that all of us have used the bone-marrow as a *dernier ressort* after numerous relapses, and Arsenic had lost its magic effects. There can be no objection to using the bone-marrow in conjunction with the Arsenic. It may be prescribed as one of the Glycerin extracts, or, as suggested first by my

* *Anæmia and Diseases of the Blood-Forming Organs and Ductless Glands*, p. 99.

† *British Medical Journal*, 1894, vol. i, p. 1172.

friend, Dr. W. H. Keim, salted and in lieu of butter on bread. Iron preparations are absolutely useless.

Leucocythæmia.

The varieties of leucocythæmia are equally intractable to treatment. Clinical experience thus far has not led us into much of value, although some of the later literature reports a few palliative results. Exercise can scarcely be recommended as a remedy. The patient may be permitted to go about in the open air when his general condition and strength will permit; but as soon as the disease has become well-marked he is better off if he is kept at rest in a sunny, well-ventilated room. His diet must be regulated according to the condition of the gastro-intestinal tract. The effort should be made, however, to give as much nitrogenous food as possible. The greatest discretion must be exercised in prescribing laxatives and purgatives should constipation supervene, for it has not infrequently happened that regular doses of even the milder laxatives have set up very intractable diarrhœa. Bone-marrow has been recommended in leucocythæmia, as it has been in pernicious anæmia. The results from it are by no means satisfactory.

Arsenic seems to be the favorite remedy in the treatment of the disease; but the results, while favorable in some cases, are by no means as good as they are in pernicious anæmia. There are some physicians who are opposed to its use as valueless. It has generally been administered in the form of Fowler's solution in gradually increasing doses. Symptomatically, it is indicated in cases presenting petechiæ, voracious appetite, obstinate diarrhœa, even melæna; bronchitis with dyspnœa; prostration; œdema of extremities; tensive pain in spleen, with enlargement of that organ.

A review of the homœopathic treatment, as outlined in our text-books, is far from satisfactory, and for two reasons: In the first place, our authorities do not offer any hope as to cure, although they express a firm conviction as to our ability to relieve; and, in the second, most of the therapeutic suggestions show that the writer entertains very confused ideas as to the clinical features and etiology and pathology of the disease. Under such circumstances, we must start *de novo*, *Picric acid*, *Thuja*, *Natrum sulph.*, *Phosphorus*, *Nux vomica*, *Sulphur*, *Strychnia*, and *Cinchona* have been suggested. Cases can be treated on a systematic basis only. The conditions demanding special attention being the hæmorrhages, the buccal ulcerations, the gastro-intestinal disturbances and the profound prostration.

X-ray treatment has offered some hope, in that a number of cases have been treated by exposure of the spleen to its influence, and remarkable improvements have been reported. All the cases eventually relapsed. Further clinical investigations in this direction should be pushed. It is claimed that the follicles of the blood-forming organs in the spleen and lymphatic glands are destroyed by the X-ray.

Ewart* has reported one good result from inhalations of carbonic acid and oxygen. Bramwell† reports a similar experience, though in his case the numerous other therapeutic measures employed throw doubt on the efficacy of the carbonic acid gas inhalations.

Applications of the faradic current to the spleen, according to Bramwell, reduce the size of that organ, though they exert no influence over the course of the disease.

Splenectomy has been recommended and tried. The results have been variable. No case has been cured. The operation has been followed by a high mortality. The improvement in those who have survived is not very flattering. On the whole, it is safe to say that the operation is not to be commended. The majority of cases have been treated surgically only when the condition is far advanced or the patient in extremis.

Hodgkin's Disease.

All cases of Hodgkin's disease result fatally sooner or later, the average duration of the disease being estimated at two years. The results from treatment are very variable. In some, we are successful in bringing about remarkable degrees of improvement, while in others, we are unable to make any impress upon its course. Of late years, X-ray applications have come largely into use in its management, and there can be no question concerning the ability of this agent to reduce the glandular enlargements and even cause them to disappear for a time. In only about 15 per cent. of the cases thus treated were the results negative.

Operative treatment is to be condemned. Splenectomy is without warrant, and excision of the enlarged glands is useless. It has been suggested that if the glands are excised early the results will be good. Such a statement counts for nothing, because if the glands are excised before the enlargements become general we have no reliable data upon which to base the conclusion that a case of Hodgkin's disease has been cured.

Several years ago, I had the opportunity of seeing a friend suffering from this disease make a most remarkable recovery following a large carbuncle of the neck, which had been treated by poulticing by a backwoods practitioner of the old school—using the term old school as having more meanings than one. The patient suffered for three months with his carbuncle, and *mirabile dictu*, the glandular enlargements left also. This experience suggests the possibility of inoculation therapeutics.

The regulation of diet, exercise, and clothing should receive the same attention accorded patients with the other anæmias. Open air during the milder months of the year certainly exercises a favorable influence.

Arsenic seems to be about the only remedy which gives any regular

* *British Medical Journal*, 1898, vol. ii, p. 235.

† *Anæmia and Diseases of the Blood-Forming Organs*.

results. It should be administered as in pernicious anæmia, *i. e.*, in gradually increasing doses, to be stopped just short of the patient's tolerance. Ziemssen has recommended that Fowler's solution be injected hypodermically, and Handford has given as much as thirty minims daily in this way. There is no evidence, however, showing that hypodermic administration is any more efficient than that by the mouth. Hughes looks upon Arsenic as homœopathic to the disease, but expresses himself as favorable to the iodide, and to small doses.

Other remedies which may be tried include *Barium*, *Mercurius iod. rub.*, *Natrum sulph.*, and *Phosphorus*.

In view of the many contentions concerning the relationship existing between Hodgkin's disease so-called and glandular tuberculosis, it may prove to be good practice to treat all doubtful cases as if they belonged to the latter category, *i. e.*, by rest, open air and good feeding.

The Symptomatic Anæmias.

Symptomatic or secondary anæmias may be either acute or chronic. The acute cases are readily diagnosed, because of the self-evident nature of their causes, which are limited to hæmorrhage and septicæmia. The chronic cases originate in a multiplicity of causes, mention of which will be made in the course of a few pages, as their rational treatment can be conducted only after a thorough understanding of the etiological factors underlying the anæmia.

Anæmia from septicæmia is so exceptionally of acute onset that its existence is not fully recognized. The treatment is that of the condition producing the septic infection and of the resulting toxæmia. This subject has been fully discussed in another portion of this work, and need not be considered here.

Acute hæmorrhagic anæmia demands special elaboration. The symptoms are of an alarming character when the case is sufficiently severe in character to call for treatment. The first thing to do in every case is to determine the cause of the hæmorrhage, and put a stop to the same with the least possible delay. The means for securing this result will be found fully described under the various headings of epistaxis, hæmatemesis, hæmoptysis, hæmaturia, etc., and need no mention here. I must here repeat what I have said elsewhere, and shall probably repeat in subsequent portions of this volume; I refer to the great value of rest of body and mind in checking hæmorrhage from any source not readily reached by the surgeon's manipulations. In many cases of internal hæmorrhage it is wise to enforce voluntary rest by the administration of Opium or Morphine, thereby placing the affected organ in "a physiological splint."

The use of astringents internally, by the mouth, is of very doubtful value, although they have had the sanction of empiricists for many years.

The vaso-constrictors, as Ergot and Adrenalin, can be of value in but few cases. While they undoubtedly produce contraction of bloodvessels, they, at the same time, raise the arterial pressure, and thus to a certain extent, at least, defeat the object for which they are given. Adrenalin, undoubtedly, acts in a most wonderful manner when its action can be concentrated on the seat of hæmorrhage, as in the case of epistaxis.

Of the drugs to be recommended, because of their influence over the coagulability of the blood, *i. e.*, increasing the same, there are two deserving of mention. These are Gelatin and Calcium chloride. Good results have been claimed for the administration of Gelatin by the mouth as well as by the subcutaneous method. Still, the trend of medical opinion is almost entirely in favor of the latter. Authorities differ widely as to the quantity to be administered at a time. The solution employed should consist of 2.5 grammes of Gelatin in 100 cc. of normal saline solution, of which 5 to 10 cc. should be injected at a time. When instituting the Gelatin treatment, the physician must be assured that his solutions are absolutely sterile, and that the stock Gelatin does not contain any tetanus bacilli. In case of hæmorrhage from the alimentary tract, there can be no question concerning the advisability of administering the Gelatin solution by the mouth, *e. g.*, in hæmatemesis and the intestinal hæmorrhage of typhoid fever.

Calcium chloride is known to increase the coagulability of the blood, and may be administered in fifteen grain doses as recommended in the section on the treatment of hæmophilia. Unfortunately, its action is too slow to make it available in just those cases in which we most need it. For this reason, I have never had recourse to it.

The combating of syncope is the first desideratum when the hæmorrhage has been controlled. This is secured by the absolute rest already recommended, and by placing the patient in a position *with the head low*. The preservation of the bodily warmth is important, and so we wrap the patient in warm coverings, and give warm drinks, which may be of a stimulating character. This stimulus should not be overdone. While it is important to maintain good cardiac action, overstimulation of the organ may result in return of the bleeding. The stimulants permissible include coffee, and small doses of brandy or sherry. If syncope actually takes place, active stimulation is required; the indications in this case are best met by the administration hypodermically of *Ether* or *Camphor*. Thirst should be gratified, but with care, small quantities of water being given at a time.

The great danger in acute hæmorrhagic anæmia is the sudden lowering of blood-pressure, which always embarrasses the heart. To overcome this, we may resort to what has been called "*Autotransfusion*" or *venous infusion of normal saline solution*. I say nothing of transfusion of blood, as that confers no advantages over the two procedures above mentioned.

Autotransfusion is the readiest of application. It consists in raising the limbs so that the blood will flow into the vessels of the trunk and viscera, and of applying bandages to the extremities so the blood will be kept where it is most needed. Such a procedure exposes the patient to the danger incidental to increased vascular pressure, but that should not be considered for a moment in view of the seriousness of the situation.

The **infusion of normal saline solution** is of more permanent value, as the pressure on the limbs for autotransfusion cannot be maintained indefinitely. The saline solution may be introduced by hypodermoclysis, by the rectum or directly into the veins. The hypodermic administration is very rarely employed at the present time. It is open to the objections of being too slow and of causing an unnecessary amount of pain.

The rectal administration has the merit of ease, and, it has been claimed, is thoroughly efficient, Warmann claiming that one to two liters of the solutions may be absorbed within five minutes after injection.

Venous infusion in the method practiced by surgeons and anæsthetists during operations. It has the great merit of prompt action, but requires a certain amount of time for preparation of the patient and the solutions. It is unquestionably the most reliable of the three procedures. While preparing the patient for it, there is no reason why the rectal method may not be administered in the meantime. While the results from venous infusion are prompt, they are not infrequently evanescent in their good effects, and frequent repetition may be demanded before the patient may be considered as out of danger.

To Perform the Operation of Venous Infusion.—The solution employed is a $\frac{6}{100}$ of 1 per cent. solution of pure common salt. Roughly, and sufficiently accurate for practical purposes, this may be prepared quickly by dissolving one teaspoonful of salt in one pint of sterilized water. The temperature of the solution at the time of introduction is of more than passing importance. It has been demonstrated by Dawbarn's experiments that the best results are obtained by rather high temperatures. The fear that such may do harm is shown to be groundless when it is explained that a temperature of 160° F. is essential to the coagulation of the albuminous constituents of the tissues. As a gauge of the temperature of the fluid, the best instrument is the operator's hand. The solution should be just so hot that the hand can be immersed in it without much discomfort. Exposure to the atmosphere and passing through the irrigator tube lowers the temperature somewhat by the time it reaches its destination.

The vein ordinarily selected for the infusion is the median basilic. The seat of operation is carefully disinfected by scrubbing and the application of Bichloride solution. Next, a bandage is applied above the elbow with sufficient tightness to constrict the veins and obstruct the return circulation. An incision is now made through the skin and over the vein,

and the subcutaneous fat is exposed. This is then torn through with the handle of the scalpel and the vein exposed and isolated from the surrounding structures. A ligature is then applied and tied at the lower angle of the wound. Another ligature is inserted and left loose towards the upper end. The vein is now picked up with a pair of forceps, and its wall incised obliquely, and the nozzle of the irrigator is inserted. The loose ligature is then utilized for retaining the nozzle in place while the saline solution is being introduced. The quantity of saline solution used must depend altogether upon results. As a rule, from one pint to one quart is necessary; nevertheless, the dosage must be governed entirely by the effect upon the pulse.

Following the above treatment, *it is of paramount importance that the patient be saved from any exertion or excitement, which must throw increased labor on the heart.* It is unwise even to make any physical examinations of the patient, unless such are absolutely necessary. Permission to indulge in exertion or changes in posture must only be given when the clinical data show that the heart is abundantly able to respond to the extra demands made upon it. The increase of muscular activity must be carefully graded, for although patients recuperate very rapidly after hæmorrhage, it is not unusual for unwise exertion to bring about relapse.

The diet must be of liquid character until all danger has passed. The best foods are milk, bouillon, and broths, administered in small quantities at short intervals. As soon as conditions warrant it, the diet list may be amplified by permitting milk toast, well-boiled rice, soft-boiled eggs, after which we have no additional difficulty, the patient rapidly going on to full diet.

Cinchona is practically the only remedy indicated in post-hæmorrhagic anæmia. It must be given in ten to twenty drop doses of the tincture every three to four hours. There seems to be no reliable evidence as to the value of iron, which has been highly recommended and is extensively used by many physicians.

The treatment of chronic symptomatic anæmia consists, first, in the recognition of the cause of the condition, and, secondly, the adoption of measures directed against the primary disease. The conditions which may induce chronic anæmia include concealed and persistent hæmorrhage, unfavorable hygienic surroundings, foul air, insufficient or improper food, chronic suppuration, prolonged lactation, seminal losses, renal diseases, fevers, toxæmia, disease of the digestive tract, malignant disease wherever located, syphilis, malaria, parasitic affections, and chronic poisoning by lead and arsenic.

Hæmophilia.

A knowledge of the laws governing the transmission of hæmophilia by heredity is important in the prophylaxis of the disease. According to a generalization, which, however, is not without numerous exceptions, the disease occurs in the male members of the family, while it is almost exclusively transmitted by the female. Prophylaxis demands, then, that we shall not give our sanction to the marriage of female members of a hæmophilic family, whether or not they are victims of the disease. Male members of the family, when free from the disease, are safe in marrying. If they are victims, then it is a wise plan for them to refrain, especially if other male relatives have had hæmophilic children. The danger to be apprehended is mainly to the offspring. Of 130 cases of pregnancy in hæmophilic women collected by Kolster, three died and there were sixteen miscarriages. This shows that pregnancy is a serious condition, but not as much so as one would suppose *a priori*. The propriety of inducing abortion in the pregnant hæmophilic has been raised. The idea may be dismissed. Experience bearing on this point is small, but such as it is indicates that the danger from hæmorrhage is just as great in the abortions as it is in those left to the course of nature.

Nurslings born of hæmophilic parents should not be subjected to any of the so-called trifling surgical procedures performed at that time of life, unless the operation is imperatively demanded to save life. Many cases in which the patient barely escaped death from hæmorrhage have been reported as following the usually insignificant operation of circumcision. Even vaccination must not be regarded indifferently. Although the bleeding from the scarification is usually scant, one case with fatal result has been recorded.

Throughout life, the hæmophilic should guard himself against such injuries as are liable to produce internal or external hæmorrhages. When the time arrives, he should select an occupation which will expose him to a minimum of danger from traumatism.

Attention to the general health of the patient is undoubtedly of value. The patient should avoid all stimulants, including alcohol, coffee, and tea. Highly seasoned food must be avoided. A diet consisting of vegetables with moderate indulgence in meat is generally regarded as the best.

In case hæmorrhage comes on, the treatment must be based upon general surgical principles, together with such adjuvants as have been suggested under the peculiar circumstances existing. The contentions as to whether hæmophilia is dependent upon deficient coagulability of the blood or disease of the bloodvessels need not concern us here. Experience has taught that applications of tampons saturated with Suprarenal extract or Adrenalin solution are most excellent in staying epistaxis.

Adrenalin has also been employed with remarkable success in bleeding from open wounds.

Gelatin has been recommended because of its assumed ability to increase the coagulability of the blood. It has been administered by hypodermic injection, 180 cc. of a sterilized 2.5 per cent. solution is the ordinary dosage.

Tannic acid and other styptics, which were so much in vogue several years ago, are now admitted to be entirely useless, and should be discarded.

Calcium chloride, as recommended by Wright, seems to be gaining in popular favor. Numerous cases are now on record proving its efficiency. The proper dosage is fifteen grains three times daily, dissolved in water. The only objection to its use is its nauseous taste, but this should have no weight in view of the many favorable reports concerning it.

Hydrastis canadensis and *Hydrastinine hydrochlorate* 1x are recommended by Halbert. He prescribes the former in from five to fifteen minim doses of the fluid extract every three hours.

Hæmophilic joints should be treated by placing them at absolute rest and compression, the latter favoring more rapid absorption of the effusion. If the case does not yield properly, then the joint may be punctured and washed out with a Carbolic acid solution. Incision should never be attempted, as it is dangerous both to life and in subsequent integrity of the joints.

Remedies other than those above mentioned to be considered include *Phosphorus*, *Secale*, *Sulphuric acid*, *Terebinthina*, *Arnica*, and *Erigeron*.

Purpura.

A differentiation of the various clinical conditions bearing the designation of purpura is unnecessary for therapeutic purposes; hence, this article deals with the subject as a whole. Efficient treatment must recognize that the disease depends upon some constitutional condition; in some cases at least, an infection; and, secondly, that the blood coagulability is impaired and the structure of the minute bloodvessels altered. Notwithstanding the apparent well-being of the patient in the vast majority of cases, it is a wise precaution to enforce rest. Experience has demonstrated that by so doing we shorten the duration of the disease. Rest, moreover, is a wise precaution for the protection of patient and physician alike, for occasionally we meet with cases in which unexpected and serious complications arise. Should such take place in an ambulant patient under the care of the physician, the latter is oftentimes blamed for not adopting proper precautions to avoid the accident. Again, such rest is undoubtedly of value in preventing recurrence of hæmorrhage, and lessening the chances of incurring traumatism. The course of purpura is seldom a short one; hence, abso-

lute rest may prove irksome to the patient ; indeed, if enforced too rigidly, he may rebel against even slight restraint. It is the wisest plan, therefore, to regulate the degree of rest according to existing conditions, insisting only on the avoidance of any exertion. In bad weather or during the winter months, the patient should be confined to his room. In mild weather or on sunshiny days, advantage should be taken of the opportunity of giving him a maximum of fresh air. When the disease occurs in children, the enforcement of rest is a very difficult if not an impossible matter, owing to the natural restlessness incidental to that time of life. The physician's greatest effort in them should be directed to the prevention of traumatisms, however slight.

Diet vies with fresh air as a means of maintaining the patient's constitutional condition. Milk is the best food for a time. After that the object should be to give easily digested foods, especially proteids. Fruit juices, especially those of oranges and lemons, are desirable. Stimulants of all kinds, however mild, must be positively forbidden.

The remedies include *Arsenic*, *Arnica*, *Rhus tox*, *Bovista*, *Sulphuric acid*, *Secale*, *Baryta*, *Lachesis*, *Crotalus*, *Vipera*, *Terebinthina*, and *Conium*.

Arsenic is generally admitted by physicians of both schools as the leading remedy in all forms of purpura, especially in the recurrent cases. The special symptoms indicating it include sensations of heat or burning, dyspnœa, restlessness, and pulmonary and cardiac complications. It is of especial value in the purpura of old people.

Arnica is hardly to be regarded as a remedy for the purpura, *per se*. Its sphere of utility is found in its ability as an absorbent to lessen the duration of the ecchymoses.

Cinchona is the remedy for the anæmia and prostration following the hæmorrhages. The patient complains of soreness in numerous portions of the body. The symptoms are all aggravated by mental and bodily effort ; sweat is profuse and exhausting.

Sulphuric acid, like *Arsenicum*, is adapted to the purpura of the aged. Weakness and tremor are prominent. If there is hæmorrhage, the escaping blood is of a dark color.

Phosphorus is regarded as an important remedy for the malignant form of purpura by Jousset, inasmuch as its pathogenesis presents multiple hæmorrhages and great prostration. Hughes, on the other hand, protests that such hæmorrhages in the *Phosphorus* case are always attended by atrophy of the liver, rather than dependent upon a primary disorder. Nevertheless, he believes that we should keep *Phosphorus* in mind when treating purpura. Certain it is that this remedy is capable of producing widespread degenerative changes, which are by no means limited to the liver.

Hamamelis is a favorite remedy of some physicians in the treatment

of purpura. Its utility is based entirely on its ability to control venous hæmorrhages.

Aconite and *Belladonna* are the principal remedies in those cases which present fever as a prominent feature.

The various serpent poisons, of which I have mentioned three in the above list, produce numerous purpuric blotches in accidental poisoning cases—an effect that is known to depend upon alteration in the structure of the blood. How far such a condition is present in purpura must remain unknown for the present. Jousset regards *Lachesis* as especially indicated in the malignant form, presenting petechiæ, epistaxis, hæmoptysis, etc., with syncope, prostration, and weak pulse.

Bovista was successfully used by Jousset in a case presenting severe colic as its prominent symptom. Other remedies to be thought of under like circumstances are *Arsenic*, *Mercurius*, and *Secale*.

Diseases of the Spleen.

The preparation of a section devoted to the treatment of disease of the spleen is somewhat of an anachronism, because, with very few exceptions indeed, the lesions of this organ are secondary to disease in other localities or to constitutional disturbances. Nevertheless, the symptoms presented by the splenic involvement are at times so obtrusive as to call, if not for special measures, at least for special symptomatic or palliative treatment.

Floating Spleen ; Displaced Spleen.—Whether or not a floating spleen gives rise to symptoms, its existence should have practical recognition by the application of a suitable bandage or binder, which is capable of keeping it in its normal position. If the displacement causes pain, then such reposition is an absolute necessity, and no efforts are required on the part of the physician to secure the co-operation of the patient. The reposition of the spleen is to be regarded as necessary, because of the possibility of the displaced organ contracting adhesions to neighboring viscera, and thus producing serious symptoms and disturbance of function.

When the floating spleen is due to enlargement of the organ, the pathological state giving rise to the latter condition should receive the first consideration, for the cure of that makes the mechanical problem a much simpler one. The recommendation made by von Engel that the movable organ be so manipulated as to twist its pedicle and thus limit its blood supply, and cause atrophy of the tumor, is unworthy of serious consideration. It is to be mentioned to be condemned as dangerous. Such manipulations cannot be performed so as to regulate the splenic supply accurately. Thus it may happen that the entire blood supply is cut off and the spleen becomes gangrenous.

Splenopexy has been proposed and performed in a few instances. The operation is a dangerous one, and its results as to permanency of the fix-

tion are uncertain. Its sphere of utility should be limited to cases in which the floating spleen is not associated with other splanchnoptoses.

When a spleen is dislocated and fixed, and it causes severe suffering, extirpation is the only remedy. This procedure is to be regarded as very dangerous, the mortality being a little short of 33 per cent. In justice to the statistics, it should be said that the cases operated have practically all been associated with extreme enlargement of the organ.

When floating spleen is part of a general ptosis of the abdominal viscera, the proper treatment is that outlined under the headings of gastroptosis and enteroptosis.

Perisplenitis.—Causal indications are of little or no use in the treatment of perisplenitis. Many cases are dependent upon trauma. Other causes include the extension of peritoneal inflammation by contiguity from other organs to the spleen, and extension of circumscribed disease of the splenic parenchyma to the periphery of the organ. The treatment must be purely symptomatic. Pain is the prominent symptom. It is best relieved by hot applications and the administration of *Bryonia*, *Belladonna*, or *Arnica*. If these remedies fail, we must have resource to *Morphia*, preferably hypodermically.

Infarct of the Spleen.—The inability to diagnose infarcts of the spleen with any certainty makes it impossible to outline a course of treatment for that affection. About all we can do is to treat the primary disease, usually an endocarditis, and prescribe symptomatically. The local pain should be relieved by hot applications and indicated remedies. Some cases are best treated by applications of ice-bags. Splenic infarcts are very liable to terminate in suppuration; hence, the clinician should watch the patient carefully for signs of the development of that condition. Very often his watchfulness is unavailing, because of the complicating factors, the primary condition often being of septic character, thus depriving us of the assistance of the constitutional symptoms of suppuration as relating to the spleen alone. While thus watching for the advent of suppuration, one should bear in mind that every infarct, even though it originates from an infected source, does not terminate in abscess.

Abscess of the Spleen.—While any treatment directed specially to the cure of splenic abscess must be operative, it is a wise plan not to proceed too hurriedly, for we have good reasons for believing that some suppurative lesions of the spleen disappear spontaneously. These are cases originating in small infarcts from bland emboli. When the diseased organ can be reached through the abdomen, the operation by preference is exploratory puncture, a large canula being necessary because of the thickness of the pus. When, on the other hand, the spleen lies entirely behind the ribs, the operation should be undertaken in two seances. In the first the operator passes through the pleura and the diaphragm. The wound is

then packed, and when sufficient time has elapsed for the pleural surfaces to adhere within the sinus thus formed, the abscess is opened and drained. When, as sometimes happens, the abscesses are numerous and the splenic tissue gangrenous, extirpation of the organ is the remaining measure. Very little can be said concerning the results of these operations, as cases are rare. At the best, the results are not flattering.

Acute splenic tumor requires no special measures in the majority of cases. It usually disappears with the disease which has given rise to it, such diseases being malaria, typhoid fever, and other infections.

Syphilis of the spleen requires antisyphilitic medication, though this is effectual only in cases in which the lesion is a gummatous growth.

Amyloid spleen is usually associated with amyloid degeneration in other organs. Its treatment consists in the removal of the focus of suppuration, or the treatment of the syphilitic infection.

Tumors of the spleen are amenable only to surgery, if to anything. Thus far the literature is scanty and the results poor; indeed, not sufficient to justify the serious operations necessary for a cure.

Remedies in Diseases of the Spleen.—Our literature relating to the therapeutics of the spleen is very meagre. It is best summarized by Goodno* as follows:

Aconite.—In inflammation of this organ, the chief remedy is Aconite, which often arrests the disease in a short time, even if the patient vomits blood, or which at least modifies the disease so that Arnica will remove the rest (Jahr). When inflammatory fever attends (Lilienthal).

Agaricus.—Valuable in congestions and enlargements of the spleen (Clifton).

Arnica montana.—Has proved a valuable remedy; there is much testimony in its favor; splenic affections following injuries; splenitis with typhoid tendency; the patient is apathetic, does not consider himself very sick; vomiting of blood; pains in the spleen, which may be either dull or acute. Hyperæmia or inflammation of the spleen during the infectious fevers.

Arsenicum.—Splenitis, acute or chronic; enlargement; induration of the spleen; especially in affections of the spleen occurring during the malarial fevers; when the symptoms present marked periodicity; tensivè, aching, stitching pains in left hypochondrium. Diarrhœa, stools watery, bloody, undigested.

Asafœtida.—Heat in the spleen and intestines; very offensive stools (Lilienthal).

Bellis perennis (English daisy).—This rival of Arnica has caused the following symptoms: Region of spleen so swollen that the false ribs seem forced out.

* *A System of Medicine Based upon the Law of Homœopathy.*—Edited by H. R. Arndt, M.D. vol. ii, p. 23.

Bryonia.—Severe pain in the region of the spleen, increased by movement and especially by walking, but subsides when at rest (Bayes). Hughes recommends Bryonia when the capsule of the spleen is affected (as shown by the stitching pain).

Capsicum.—In chronic splenitis. . . Capsicum generally proves one of the most efficient remedies, both if the spleen is very sensitive and likewise if it is swollen and indurated, especially after fever and ague (Jahr). Spleen enlarged, sensitive to pressure. Especially suited to cases which have been overtreated with Peruvian bark and its alkaloids.

Cinchona and its derivatives.—Hyperæmia of the spleen. Splenitis, acute and chronic. Hypertrophy of the spleen. Anæmia; pale, ashy countenance; oppressed breathing, palpitation of the heart, vomiting, and diarrhœa; pains in the left hypochondrium, dull, aching or acute, pleuritic in character. Lilienthal "gives aching, stitching pains in the spleen when walking slowly; pains extend in the long axis of the spleen; oppression of the chest; dropsy."

Carbo vegetabilis.—Pressing pinching in the region of the spleen; quick, lightning-like stitches; abdomen bloated; scurvy; so weak can hardly walk (Lilienthal). Rademacher assures us, according to Mosler, "that he has proved vegetable charcoal to be curative in some undoubted cases of splenic diseases." "In a man who suffered from a very tedious enlargement of the spleen with secondary trouble, some shortness of breath and cough, other means failing, he tried the vegetable charcoal with brilliant effect, so that the patient was soon entirely freed from his disease. In other cases, however, the splenic asthma did not yield to the charcoal."

Carduus marianus.—Passive hæmorrhages connected with diseased liver and spleen (Raue).

Ceanothus Americanus.—Enlargement of the spleen; deep stitches with or without soreness. This remedy is highly spoken of by many who have employed it in splenic hyperæmia and inflammation, both acute and chronic. Some are so extravagant in its praises as to say that they use no other remedy. Dr. Hale considers the spleen the special seat of action of this drug. Dr. Burnett upon the strength of Hale's publication has used it with success; he recommends it to be given whenever there is complaint of deep-seated pain in the side, even when no tenderness or enlargement of the spleen can be made out, and he has found co-existing affections, such as leucorrhœa, to disappear under its use with the pain itself.

Ferrum metallicum.—Enlarged spleen; especially as a sequence of malarial affections; cramp pains or shootings in the region of the spleen; vomiting, undigested diarrhœa; stools after eating or drinking; dyspnœa; palpitation, œdema of the extremities. In anæmic, exhausted persons who have abused Quinine.

Iodine.—Swelling, pain down to iliac region.

Natrum mur.—Enlargement of the spleen in connection with malarial fevers.

Nux moschata.—Enlarged spleen, loose bowels; stitches in spleen, must bend double; abdomen enormously distended; dropsy (Lilienthal.)

Sulphuric acid.—Spleen hurts when he coughs.

Ranunculus bulbosus.—Sensation of soreness in the hypochondrium, especially to the touch; pulsation in left hypochondrium; abdomen feels sore and broiled. This remedy was thought highly of by C. von Bönninghausen and C. Dunham as a spleen remedy of value.

In addition to the above, Jousset * recommends the following:

Spiritus glandium quercus as a splenic remedy either in the acute or chronic stage, even when ascites and dropsical swelling of the leg are present, with hypertrophy of the organ. Under the administration of this remedy the urine will increase greatly in quantity. It has a special action upon the splenic affections due to chronic alcoholism.

Polymnia uvedalis.—In acute splenitis with fever, and tenderness over the left hypochondrium; congestion and stasis; also in ague cake; hypertrophy of the spleen.

Goiter.

The prophylactic treatment of goiter can only be considered in localities where the disease is endemic. But little is known concerning the origin of these cases beyond the fact that those who are affected are in the habit of drinking a certain kind of water. The particular ingredient of the latter doing the damage is not known. It is sometimes believed to be the result of limestone through which the water percolates, but this does not satisfy the conditions in all localities. Whatever the deleterious agency is, it appears to be removed by boiling the water; hence, it is advised that patients living in infected districts boil all drinking water.

It is a wise plan for patients with goiter, as well for those who become affected, to avoid exertion which produces any hyperæmia of the neck.

Bad hygienic surroundings are believed to be predisposing factors; hence, overcrowding, impure air and insufficient or improper feeding must be avoided. That these are not operative in every case is shown by the occurrence of the disease among those who are surrounded by the best of hygienic influences.

In early cases, it has been demonstrated that removal to the seashore is sufficient to cause the disappearance of the glandular enlargement.

The treatment of goiter is both medical and surgical. The great advances in surgery during the past few years have caused physicians to neglect the former, notwithstanding the majority of cases can be cured by this course. Of the medicine employed, Iodine is the one which has

* *Practice of Medicine*, p. 903.

received praise from physicians of both schools. Several methods of administering it have been proposed, and each of these has its adherents.

The plan that has been the longest in vogue is the daily applications of tincture of Iodine to the enlargement. The main objection to this treatment is a cosmetic one, the discoloration being unsightly. Decolorized tincture has been recommended, but should not be used, as it is practically worthless. When, after a few days, the local application of the Iodine produces a well-defined dermatitis, the treatment should be discontinued for a short period.

Better results are believed to be obtained from the application of the ointment of the red Iodide of Mercury of 3 per cent. strength. The ointment should be well rubbed into the gland daily until the surface becomes tender, when the applications should be abandoned for a few days. The action of the medicament will be greatly enhanced if the goiter is exposed to the rays of the sun for twenty minutes to half an hour after the applications.

Iodine itself may be used in the form of ointment in the strength of 5 to 10 per cent. Iodovasogen is the best preparation of this kind.

The injection of alcoholic solution of Iodine into the gland, while followed by good results in many instances, is a practice not to be recommended, because this method involves some risk by reason of the accidental injection of the drug into a bloodvessel. In one case it produced death.

The internal administration of Iodine as Potassium iodide is in general favor. Small doses of three grains three times daily are usually efficient, though Murray recommends as much as ten to twenty grains at a dose and the same frequency. Whatever the dose selected, the drug should never be pushed to the extent of causing idoism.

The application of Iodine tincture by cataphoresis is to be recommended when the methods above advocated fail. While efficient, I have never liked the treatment because of the superficial inflammation which results. Possibly a more dilute tincture and shorter seances will prove more satisfactory.

Kocher, than whom there is no greater authority on the surgery of the thyroid gland, believes that 90 per cent. of cases of goiter are curable by the iodine preparations and general hygienic measures, leaving but 10 per cent. to the surgeon.

Cystic goiters are amenable to surgical treatment only. Mackenzie recommended that the cyst be tapped and then injected with a 25 per cent. solution of Perchloride of iron; or that the cyst be incised and drained. The latter course is more certainly within the control of the surgeon, and is to be preferred.

I have treated several cases of goiter with electrolysis. The results

are only moderately good. The method is applicable only to large goiters. The technique consists of the introduction of a needle electrode, insulated to within a short distance from its point, into the glandular substance. This is then attached to the negative pole of the battery. The positive pole should be attached to a large flat-plate electrode, which is to be applied over the opposite side of the enlargement. If desired, several needles may be inserted and attached by branching cords to the negative pole. The strength of current used should range from five to ten milliamperes, and the duration of the seance five minutes. The treatments should be repeated once or twice a week, according to the degree of inflammatory reaction ensuing.

The practitioner may also consult the pathogeneses of *Mercurius iod. rub.*, *Silicea*, *Sulphur*, *Hydriodic acid*, *Arsenicum iod.*, *Antimonium iod.*, *Badiaga*, *Plumbum*, *Secale*, and *Calcarea iodata*.

Simple applications of galvanism, though recommended by some practitioners, have never yielded the slightest results in my own experience, and I have tried the plan faithfully. The only recommendation that can be given it is that it helps to hold the patient while the medical treatment is doing its work.

Administration of thyroid extract has been recommended by numerous authorities. The most extensive statistics of this treatment are those based upon the observations of v. Bruns, who treated 350 cases, curing 8 per cent., greatly improving 36 per cent., and slightly improving 30 per cent.

In the conduct of the treatment of a case of goiter, the physician should make careful measurements of the enlargement at each visit. He must not be too ready to jump to conclusions, because many goiters vary slightly in size from day to day in response to vaso-motor influences.

Besides *Iodine*, *Bromine*, *Spongia*, *Calcarea*, *Baryta iod.*, and *Phytolacca* have been recommended.

The indications for *Bromine* and *Calcarea carb.* relate mainly to the character of the patient rather than to his disease. *Bromine* is recommended in patients with light hair and blue eyes and fair skin. *Calcarea* in so-called scrofulous subjects, adenoid vegetations, faulty nutrition, and lymphatic enlargements.

Baryta iod. is indicated by the association of a cretinoid state, the goitrous enlargement being hard and firm.

Phytolacca, nodulated goiters, the right side of the neck being swollen; jerking, lancinating pains, worse in damp weather and at night.

Calcarea fluorica has been recommended in goiters of stony hardness.

Medical treatment failing, we may resort to surgery on two indications. The first is cosmetic. Unless the tumor is a large one, or progressive, the patient should be dissuaded from her purpose, for while the mortality of removal of the thyroid gland is not high (about 6 per cent.),

nevertheless there is a distinct danger which the patient should not undergo for vanity's sake alone. The other indication is afforded by the progress of the growth to such size as to embarrass respiration or rapid progress despite treatment, so that danger is ultimately threatened. The latter qualification is the more important, for the sooner a goiter which resists treatment is removed the less will be the danger incurred by the operation.

It is important that the operator leave a portion of the thyroid gland *in situ*, as otherwise the patient will be the victim of the cachexia strumipriva.

Exophthalmic Goiter.

The great barrier to successful results in the treatment of exophthalmic goiter lies in the long period of time over which these measures must be enforced, their attendant expense, and the inability of the wage-earner to spare the time. Nevertheless, the physician should make it his duty to impress upon the patient the importance of systematic and aggressive treatment. If not undertaken in the beginning it will be necessary some time. The later it is begun the greater will be the necessity for it, the more aggravated the case, the longer the treatment must be continued. In the long run, then, time and money are wasted. None but an aggressive therapist should undertake the management of a case of exophthalmic goiter.

The most important element in the treatment of this disease is rest. I am firmly of the belief that it should be made absolute, even in the beginning. There are many authorities who object to this course, in that it must be continued over a great length of time, and this makes the patient introspective. We treat cases of tachycardia from other causes than Graves's disease by rest; why should the measure not be adopted in this as well? It is certainly the most reasonable measure for overcoming the rapid heart from any and all causes. Of course, there are cases in which the enforced rest and idleness is bed does lead the patient to become morbid. Then the physician and nurse must exercise their ingenuity to overcome the difficulty. If unable to do so, the plan of absolute rest must be discarded and relative rest only enforced. Under no circumstances should the physician permit the patient to go about his usual occupation without strict supervision. There is a natural tendency on the part of the disease to produce cardiac dilatation.

Hydriatric measures have a special beneficent influence over the cardiac action and the general condition of the patient. In the first place, the application of cold compresses over the præcordia not only calms the excited action of the heart and reduce the pulse frequency, but they relieve the dyspnoea. A similar effect may be obtained, though to a less marked degree, by the cold douche administered with considerable force to the spine and extremities. Dana advises the spinal ice-bag. The general con-

dition of the patient may be improved greatly by cold sponge-baths followed by brisk friction each morning.

The *diet* should be prescribed pretty much on the same lines as would be outlined in an ordinary case of neurasthenia presenting the same general clinical picture. This means easily digested liquid foods, as milk, broths, and raw eggs at first. Later, we must extend the diet list, always insisting that the food be of a nourishing quality. It is advisable to prescribe massage, not because it has any specific influence over the course of the disease, but because it promotes proper tissue changes, and so aids nutrition and helps the patient to take a larger quantity of food without detriment. It is very seldom that these patients can tolerate a restricted diet for a long time, as, for example, the skimmed-milk diet of Schnaubert.

As in all neurotic conditions, the psychic element is important. This is best brought to the front by the personality of the physician and nurse, and an assumption of quiet confidence on the part of the family.

A sufficiently large number of cases have been treated successfully by operations on the nose and naso-pharynx as to lead a number of authorities to recommend that these parts be examined as a routine measure, and any difficulty therein existing corrected. Hack reported a case of exophthalmic goiter in a mouth-breather. He cauterized the mucous membrane of one nasal cavity. On the following day the exophthalmos on the corresponding side had greatly diminished. The operation was then repeated on the opposite side, with correspondingly favorable result. The case was thus cured. Massholder has cured one case by the removal of nasal hypertrophies.

The general impression concerning the influence of pregnancy on patients with exophthalmic goiter is that the latter disease is favorably influenced thereby. Some French physicians have even advised pregnancy as a means of treatment. Huthinsob says that the disease never occurs during pregnancy. Habershon, however, reports a case in which pregnancy apparently excited the disease.

Electricity is a valuable adjuvant. The methods of application vary greatly, according to the operator. The best results are to be obtained by the method recommended by Rockwell. He places the "cathode over the cilio-spinal centre above the seventh cervical vertebræ, and the anode in the auriculo-maxillary fossa, gradually drawing the latter (after a few minutes of stable treatment) along the inner border of the sterno-cleido muscle to its lower extremity. The second step in this process consists in removing the anode to the position occupied by the cathode and placing the latter over the solar plexus, using for a minute or so longer a greatly increased strength current. In one case, failing, after considerable effort, to accomplish more than a very moderate degree of amelioration, he made use of currents that were rapidly increased every few seconds

with considerable benefit." While this treatment is the one we usually employ, others are recommended by competent authority, and for the sake of completeness deserve mention. Leslie Phillips cured one case by sub-aural galvanization, using a current of seven milliamperes for ten minutes daily. Suckling prefers galvanization of the cervical sympathetic. Vigoureux believes in faradism, and lays down the following explicit directions: (1) A large electrode from 7 to 8 c. m. in diameter is applied to the inferior part of the neck posteriorly, and is held in position by means of a band. The other electrode is olive-shaped or button-shaped, and less than 1 c. m. in diameter, and is connected with the positive pole of the battery. This electrode is applied behind the angle of the jaw in front of the sterno-mastoid muscle, and is made to press upon the carotid artery. The application is made during a minute and a half, and is then transferred to the opposite side, where it is continued for the same length of time. (2) The small electrode is then passed lightly over both orbitales palpebrarum in turn. (3) The olive electrode is now replaced by a plate 4 c. m. in diameter, and is applied to the thyroid tumor. (4) The next electrode is now rendered positive and is applied to the præcordial space in the third intercostal space to the left of the sternum, and the current should be sufficiently strong just to excite fibrillary contractions. The application is made for two or three minutes. The seances are repeated every second day. Cardew describes a treatment which he leaves to the patient's attendants. He gives his principles in a few words, as follows: (1) Galvanism is superior to faradism. (2) Very weak current strength (two to three milliamperes) is sufficient. (3) Each application should last six minutes. Frequent applications (three times a day) should be made. (4) The anode should be placed over the nape of the neck, the centre of its lower border corresponding to the seventh cervical spinous process, and be held firmly in that position during the application. The cathode should then be moved up and down the side of the neck from the mastoid process along the course of the great nerves. The cases reported by Cardew show conclusively the value of his method, which, after all, is but a modification of that of Rockwell, simplified for lay administration of the current.

Numerous attempts have been made to discover a serum which shall cure this disease. Most of these have met with partial success, though not sufficient to bring them into general use. Of late, quite a little has been said in favor of Beebe's serum, and there are some good observers who believe that he will ultimately succeed in solving the problem.

As to medicines, I have the greatest confidence in *Lycopus*, which I have now used for fifteen years. It is best administered in the mother tincture in doses of five to ten drops every three hours. Under its use the heart action is often quieted, and the general condition of the patient im-

proves. This remedy was first recommended by Hale many years ago, and was highly praised by Lilienthal.

From a symptomatic standpoint, many cases will call for Sulphur. So frequently, indeed, do we meet with such a relationship it would seem impossible to treat a case without the administration of that remedy at some time in its course.

For the violent palpitations with congestions, *Aurum* is a good remedy, especially if mental depression is a prominent feature of the case. *Nitrate of Amyl*, *Glonoïn* and *Pilocarpine* are adapted to the morbid flushings and sweatings. *Iodine* is suited to cases in which goiter is well marked, and the heart has undergone hypertrophy. The patient is irritable and nervous; vertigo, cerebral congestions, hysterical manifestations, epistaxis, excessive hunger, emaciation, tremor, fainting and debility are additional indications for its use. *Belladonna*, *Ferrum*, *Arsenicum*, *Baryta carb.*, the *Calcareas*, and *Conium* may be called for by the symptoms of individual cases.

Digitalis in physiological doses as a means of slowing the heart's action is absolutely useless, and therefore a waste of time. *Strophanthus* has a favorable action in some few cases, but is far inferior to *Lycopus*. *Iodide of Potassium*, as recommended by some few old-school authorities, is generally accepted as harmful. This is what one would expect from what we know of the physiological effects of this drug and the symptoms of exophthalmic goiter. Phosphate of sodium in doses ranging from one to four drachms in the twenty-four hours is recommended empirically by Collins and others. Many years ago Seguin recommended *Aconitia* in doses of $\frac{1}{200}$ of a grain four times daily. The dosage may be increased until the patient is taking $\frac{1}{100}$ of a grain four times daily, providing, of course, that the discomfort from the physiological action of the *Aconitia* is not an annoyance. The testimony given by old-school authorities is to the effect that the drug slows the heart and raises the blood-pressure.

The recent advances made in the knowledge of the physiology of the thyroid gland and the improvements in surgical technic have led to increased popularity of operative treatment of exophthalmic goiter. At one time, operative interference was rightly regarded as highly dangerous, and not to be advised until every possibility of cure by other means had been excluded. Improved results and low mortality now lead us to surgical treatment when the case progresses, despite apparently wise medical treatment, or the patient's circumstances are such that he cannot afford the time or the expense incident to the prolonged attention necessary if the physician is to retain charge of his case. The lessened mortality of operative interference is shown by the statistics of Halsted, who had 2 deaths in 90 cases; Kocher, 9 deaths in 254 operations (3.5 per cent.), and no deaths in his last 91 operations; Mayo, 9 deaths in 176 cases (4 deaths occurred in the first 16 operations; no deaths in the last 75 operations). Such

wonderful results have been brought about by preliminary preparation of the patient, selection of time for operation, good operative technic, and the exercise of fine judgment in deciding as to the character of the operation and the extent of diseased tissue to be removed. Kocher* lays great stress on the importance of making systematic observations of the patient's blood-pressure. He very properly warns against indiscriminate operating in patients whose cases have progressed to the stage of cardiac dilatation. "We are then to decide whether or not we have to deal with a compensatory hypertrophy, the result of increased cardiac activity brought about by the tachycardia. If this is the case, the dilatation will be slight and constant, and, what is more important, blood-pressure will be increased. This we find in the majority of cases. A systolic blood-pressure, even of 195 mm. mercury (Riva-Rocci), does not forbid operation, but we must be sure that the high blood-pressure is proportional to the degree and constancy of the tachycardia. If this is not the case, extreme care is necessary. If we find the blood-pressure below normal and the disease highly developed we must study the condition, and especially note the action of the heart after exertion and excitement. Under these circumstances, we find a sudden very marked dilatation of the heart, irregularity of the pulse and a blood-pressure which cannot be measured by our ordinary methods. These patients must be carefully watched and prepared for operation, and, what is more important, they should never be submitted to an immediate extensive operation."

Another point upon which Kocher lays stress is the degree of toxæmia present, as evidenced by insomnia, extreme nervousness, great fatigue, weakness, diarrhoea, vomiting, and a high degree of tachycardia with irregular pulse and a very vascular thyroid. Such symptoms he observes are more pronounced in the early stages, especially in cases with rapid development. Such cases do not warrant an extensive operation.

A third precaution inculcated by Kocher consists in the observation of the lymphocyte count. As stated by him, in nearly all cases we find a relative lymphocytosis with a diminution in the polymorphonuclear neutrophils. "This increase (of the lymphocytes) is proportional to the degree of the disease, and if there is no increase of the lymphocytes the case is an especially serious one. Only in very early undeveloped cases and those of long-standing which have improved do we find that lymphocytosis is absent." . . . "We know very little as yet of the significance of lymphocytosis." . . . "The very fact of substitution of myeloid leucocytes by lymphocytes seems to me (Kocher) of further importance. It might explain why an ordinary even slight infection or intoxication acts so badly on a patient with exophthalmic goiter, because ordinary leucocytosis cannot get

* *Journal of the American Medical Association*, October 12, 1907.

so far or substitute lymphocytosis. Therefore the patient's condition may be very bad with a slight infection, or the symptoms of exophthalmic goiter may increase to a dangerous extent. We found, for instance, in a patient with this disease who developed tonsillitis, 7,000 polynuclear leucocytes and 3,400 lymphocytes, though the symptoms of infection were very marked and a high temperature was present. When the gravity of the case is thus established, we can determine the time and decide on the method of operating, for sooner or later we will be able to operate without fear."

I have quoted thus extensively from Kocher to prove the importance of thorough study of the cases before submitting to operation. Even with this point decided, it is evident that the surgical treatment of exophthalmic goiter is no child's play. Not only do we have to deal with the danger at the time of operation, but also with that of removing too much gland or doing too extensive an operation. In the latter case, we throw the patient into the myxœdematous condition, which can scarcely be regarded as an improvement over his old disease. Better by far to do little at a seance, and operate again if need be. Better still not to operate until the surgeon has by careful study of the anatomical and physiological relationship of the thyroid gland and the parathyroid bodies made himself efficient. As Barker remarks: "Success depends so largely upon the formation of a correct judgment as to the amount of gland to be removed, and as to its removal in one or several operations, that the physician must be sure of his surgeon. Aside from the dangers of tetany, if too much gland is removed, hypothyroidism will result, and the patient is doomed to thyroid eating or an implantation; if too little, more of the gland can be taken out later."

Myxœdema.

The treatment of myxœdema may be summed up in a general way as including the adoption of general hygienic measures, such as are indicated by the symptoms, the long-continued administration of Thyroid extract, and the treatment of intercurrent ailments. The bodily temperature of the myxœdema patient is below normal. This suggests the maintenance of the bodily heat by the wearing of woolen clothing of weight adapted to the seasons. The diet is a matter of considerable importance, as it should contain an abundance of easily digested fats and vegetables. Nitrogenous foods are a secondary consideration.

The *Thyroid extract* may be administered as powders or tablets, as now manufactured by many reliable pharmacists the world over. So far as I know there are no spurious preparations on the market. The proper initial dose is usually three grains three times daily. This may be cautiously increased until the patient is taking five grains three times daily. Careful watch should be made for excessive action of the substance, especially for its effects on the circulation. This is evidenced by increased rapidity of the pulse and headache, and some authorities state as possible

symptoms urticaria, nausea, and vomiting. As soon as these appear the dose should be discontinued for a few days. On their disappearance, it may be cautiously renewed.

Improvement is noted about the end of the fourth week, when the various clinical phenomena begin to disappear. Finally, they are removed entirely, if the disease has not been permitted to continue without treatment for too long a time. It is of the greatest importance that the patient be confined to her bed for the first four weeks of the treatment, because the nature of the disease is such as to greatly enfeeble the heart, and the administration of the Thyroid extract does not help this condition until the patient has made radical progress. In fact, it may be necessary to administer cardiac tonics for a time, those finding most favor being *Digitalis* and *Strychnia*.

Even after an apparent cure has been effected, it is important that the patient should not subject herself to any unusual exertion for some little time.

The improvement thus brought about is not permanent, for, as soon as the Thyroid is discontinued, relapse takes place. It is therefore necessary to continue that substance for an indefinite period, though in smaller doses than at first. Just what the size of the permanent doses shall be can be determined only by the study of its effects upon the individual cases, and not by adopting any arbitrary rule applicable to all cases of myxœdema.

Addison's Disease.

In the present state of our knowledge, Addison's disease may be said to have but one termination—death. The fact that an occasional case, diagnosed as such by competent clinicians, makes a recovery does not alter the practical truth of the above statement. When in charge of a case of Addison's disease it is the best plan to forget in part the nature of the disease, and apply one's remedies and hygienic management to conditions that may happen to be present. Inasmuch as the lesion is believed to be an adrenal tuberculosis, and there is not infrequently tuberculosis of the lungs associated, it is rational to follow the general measures advocated in the treatment of that infectious disease, namely, the open-air life and administration of nourishing food. The latter part of the problem is not always easy of application, for the patient is commonly the victim of almost entire loss of appetite. Nevertheless, he should be encouraged to take freely, or at short intervals, milk, eggs, butter, fish, farinaceous foods, and white meats. If the patient can take the heavier meats so much the better, but if they are distasteful to him or his stomach rebels, it is the part of prudence to rest satisfied with lighter and more acceptable food.

Asthenia is the prominent symptom calling for relief. In view of this, the patient should be kept at rest, and every measure possible to avoid

disturbing him must be adopted. Many patients have been taken with dangerous syncope on making any sudden or unusual exertion. It is needless to dwell on the importance of keeping the patient from engaging in any laborious occupation. If the bowels are constipated they should be moved by enemata. Purgatives, especially those of the drastic class, are liable to cause increase of the asthenia to a dangerous degree.

Special attention must be given to the gastro-enteric system, which must be treated according to general principles.

Of late years, much interest has been displayed in the treatment of Addison's disease by the administration of the fresh and dried preparations of the suprarenal gland. Organotherapy as applied to this disease is based upon the belief that the symptoms of Addison's disease are dependent upon a toxæmia, which in turn is the result of the deprivation of the internal secretion of the suprarenal capsules. In other words, it has been proposed that we relieve Addison's disease by the administration of suprarenal extract, just as we help the myxœdematous patient by the administration of Thyroid extract. Unfortunately, the two diseases are not analogous in their clinical relations. Myxœdema has been produced experimentally by ablation of the thyroid gland. Removal of the suprarenal capsule or its entire destruction by disease have not produced the symptoms of Addison's disease. It is plain that the latter requires for its production other pathological changes than those related to the adrenals themselves. It does not seem rational, therefore, to expect a cure from suprarenal feeding. The clinical use of the latter would, if it gave favorable results, outweigh all theoretical considerations. Various preparations of the suprarenal capsule have been prescribed, and more than one hundred cases are now recorded in medical literature. The general results have not proven satisfactory so far as effecting a cure is concerned. But in a respectable proportion there has followed a certain amount of improvement, even to the disappearance of the pigmentation of the skin in a few of the cases. There is every reason to believe that the temporary improvement is not merely accidental or mere coincidences, because such improvement is far greater in degree than that belonging to the natural course of the disease. We are, therefore, forced to the conclusion that suprarenal preparations do aid us somewhat in the therapy of Addison's disease.

As to the preparation to be used and its mode of administration, we must, for the present, advise the feeding of the fresh gland or the dried extract by the mouth. It has been demonstrated that these pass the stomach unchanged, and act fully as well thus administered as if given hypodermatically. One fresh gland daily, or three grains of the dried extract three times a day, represent about the proper dosage. Hypodermic administration is open to the objection of producing septic lesions. The grafting of the fresh suprarenal of one of the lower animals is not to be recommended. In one case in which it was tried it resulted disastrously.

We have as yet no reason for looking to surgery for the relief which medicine fails to afford. The removal of the suprarenal capsules has been advised, but without good reason. At the best, the operation is a dangerous one, and is made especially so by the high degree of prostration accompanying the disease.

It is possible that organotherapy might be more efficient if instituted early. In the vast majority of cases the lesions are far advanced before the diagnosis is made.

Arsenicum is unquestionably the remedy from which we have reason to expect the best results. Its pathogenesis presents the pigmentation of the skin, the gastro-intestinal irritability, and the profound asthenia found in Addison's disease. It and Suprarenal extract are about the only remedies looked upon with favor by old-school authorities. In view of the beneficial action of Iodine in nutritive disturbances it is possible that *Arsenicum iodide* will exert better effects than the *Arsenious acid*.

Argentum nitricum was suggested by Lilienthal, because of its beneficial effects in a case treated in the Metropolitan Hospital.

Gilman* reports one case very much benefited by *Hydrocyanic acid* and *Arsenicum iodatum*.

Creosote and *Apomorphia* have been used for the vomiting with varying success.

Other remedies recommended include *Baryta iod.*, *Calcareo iod.*, and *Theridion*. *Phosphorus*, *Guaiacol*, and *Iodoform* have been suggested by Halbert in cases associated with tubercular lesions of the lungs.

Acromegaly.

Acromegaly is absolutely incurable. The majority of cases are recognized accidentally by chance meetings with other physicians than their own. It is the rule to learn that they have, for years perhaps, been seeking relief for various symptoms, as headache, hemianopsia, amenorrhœa, impotence, etc. About all that we can do is to give symptomatic and palliative medicines, and administer or prescribe hydrotherapy and massage. With most patients, however, these measures are beyond their financial ability. Many of the patients present remarkable appetites, which should be controlled. When glycosuria occurs in conjunction with acromegaly, great care must be exercised in eliminating the sugar-forming foods from the daily diet list, for these patients do not tolerate such exclusion well.

In some few cases, the severity of the headaches and their failure to yield to treatment has led to trephining, which has given relief.

Thyroid and pituitary extracts have been tried, and found of no use.

Silicea and *Sulphur* prescribed symptomatically greatly helped O'Connor's case.

* *The Clinique*, July, 1898.

CHAPTER XX.

GENERAL REMARKS ON THE TREATMENT OF DISEASES OF THE NERVOUS SYSTEM.

THE treatment of nervous diseases consists in one long-continued attention to detail. Every hygienic, mechanical, and medicinal resource must be employed perseveringly and persistently. It is with the greatest difficulty that the patient can be induced to persevere sufficiently or to carry out directions with sufficient exactitude to secure proper results.

In all cases, it should be the physician's aim to determine exactly what he can do and then do it. If he places before himself an impossible ideal—the rapid and complete cure of the patient—he is practically aiming at a target far beyond the range of his weapons. To recognize that he can but relieve suffering, improve the patient's general condition, or stay the course of the disease, will oftentimes yield good results.

Useless if not actually pernicious drugging is altogether too frequently resorted to because of the braggadocio of senseless empirics, therapeutic enthusiasts, and enterprising pharmacists. Of all such beware. Let one's knowledge of neurology be based on a good practical understanding of anatomy, physiology, pathology, hygiene, general therapeutics, and *materia medica*, and the poor nervous invalid will have his burdens sensibly lightened. We should not add to the sufferings of the patient by the indiscriminate use of hypnotics, analgesics, etc. (all of them boons properly given), lest we have to deal with pathological changes *plus* drug habits, a state of affairs that is well-nigh irremediable.

Electro-Therapeutics in Relation to Nervous Diseases.

Concerning the value of electricity as a remedy in the treatment of nervous functional and organic nervous diseases, there can be no question. Still, it is a remedy that has been greatly overestimated, because of the wild claims made for it by men not versed in the slightest degree in medicine. Oblivious of every pathological detail and living in ignorance of diagnostic neurology, they have made claims of curing an almost instantaneous recovery of at fortunate termination. Thus have they made a remedy. They either do not use it or apply it to nurses, masseurs, the laity, and to be obtained from electricity, it must

be administered by an educated physician, thoroughly versed in the essentials of electro-physics, and by him personally.

At the present day three forms of batteries are used in medicine, the static, the faradic, and the galvanic. The first named was used considerably years ago, but fell into disuse. With improvements in apparatus it was resuscitated several years ago, and has now become very popular with a number of electro-therapeutists. The great cost of a proper apparatus will prevent it from coming into general use, at least for the present, especially as it is claimed by many physicians that it can do nothing that cannot be done equally well by the galvanic battery. I myself have had no experience in its use.

The practical application of electricity in medicine involves a thorough understanding of Ohm's law, without which one might as well prescribe medicine in ignorance of *materia medica*, or operate without a knowledge of the principles of surgery. This law is: "The quantity of electricity flowing through a circuit varies directly as the electro-motive force, and inversely as the resistance." The electro-motive force is modified in a battery by the nature of the elements used in the construction of the cells, and the strength, freshness, and consequently the activity of the liquid used to act on the positive plate. The resistance will vary according to the size and nature of the conductors. The larger the transverse surface of the conductor the less will be its resistance. Certain metals conduct better than others; copper is practically the best in this respect, and hence it is used for making the connections in all batteries. Resistance is modified by the size of the electrode, the character of its covering, and the nature of the fluid with which it is moistened. Large electrodes conduct better than do small ones; well moistened, better than those drier; and those wet with warm or salt water, better than those saturated with plain cold water. The resistance of the human body also varies. Thus, if a great portion is included between the electrodes, the resistance will be greater than if the current was made to traverse but a small distance; the skin offers greater resistance than do the subjacent tissues; and different persons offer different degrees of resistance; and the body resistance of the same person will vary from day to day. All of these statements are of importance to fix on the practitioner's mind the fact that the dose of electricity cannot be regulated by the number of cells used in the circuit or by the character of the battery. It is, therefore, necessary to use a milliamperemeter to determine the strength of current in use. This instrument is only adapted to the galvanic battery.

To determine the strength of the faradic battery we are at present without any suitable instrument for physicians' use. To designate dosage, we are, therefore, obliged to rely on a statement of the distance by which the coils overlap, or by the extent to which the regulating tube is drawn out.

Coming now to what will be regarded by many as the most practical portion of the subject, the first question for consideration is, which battery shall be used in any individual case? In the treatment of paralytic affections, that current should be used which will the most readily produce muscular contractions. In cases, therefore, presenting the reaction of degeneration, as paralyzes dependent upon disease of a peripheral nerve or a nuclear lesion, galvanism is preferable to faradism. In hysterical paralyzes, faradism will, as a rule, accomplish the best results. In the treatment of paralyzes, the object of the peripheral applications is to stimulate local nutrition. This may best be accomplished if the negative pole is applied to the motor points of the muscle or nerve to be acted upon, while the positive pole is applied over a higher portion of the tributary nerve, or to the cerebral or spinal centre in which that nerve finds its origin. In the case of paralysis of the legs from acute poliomyelitis, the negative electrode will be applied to the leg muscles in turn, while the positive will be placed over the lumbar enlargement of the cord. The current must be interrupted in order to secure muscular contractions. The strength employed should be sufficient to produce contractions, and no stronger. If the treatment is made too energetic, it will only result in tiring the disabled muscles.

In faradic stimulation of muscles, both electrodes may be placed over the muscles treated; in fact, they will produce less discomfort if thus used.

For central applications, galvanism is the most serviceable. Experiments have been performed to show that a current of electricity applied to the head cannot possibly influence the brain. However that may be, clinical evidence supports the value of electricity in cerebral troubles. Here, the object is to aid local nutrition. The current should be a perfectly steady one, and mild in strength. To the head, it is ordinarily not wise to exceed three milliamperes with advantage.

In the treatment of neuralgias and painful affections generally, galvanism is preferable. Many have recommended faradism in these cases, but I have not been convinced of its value by their reports, and consequently have not used it. The object here is to secure the sedative influence of the current. The positive pole being the more sedative in its action is applied over the sensitive points, while the negative electrode is placed over the central portion of the affected nerve. The current must be absolutely free from interruptions.

The strength of current used in neuralgic affections is not an easy one to determine *a priori*. One must be governed entirely by results. Some cases improve on very mild ones; others only on applications of almost incredible amount. The same statement is true of the length and frequency of the sittings. As a rule, short and frequent sittings are better than long and infrequent ones. Some cases, notably those of sciatica, fail of benefit,

because the current employed is altogether too weak to effect a result. Any current which produces unpleasant after-effects must be regarded as an overdose, and avoided in subsequent applications.

The size of the electrodes employed must be governed by our indications. In any given case, it must be borne in mind that the actual quantity of current in any portion of the circuit is the same. The current must, therefore, be more concentrated at those points where the transverse section of the conductor is the least. Large electrodes, therefore, diffuse the current over a larger space, and small ones concentrate it. And again, large electrodes enable us to use a greater quantity of current with less local discomfort than do small ones. When, therefore, we wish to localize the current to single muscles or nerves, we make the active electrode a small one, the smallness being governed entirely by the indications for concentration. In cases like sciatica, where the parts to be affected lie deeply, and where considerable strength of current and diffusion are necessary to produce a beneficial result, we use very large electrodes.

Electrodes should be covered with some substance capable of absorbing water. Sponge, flannel, chamois and absorbent cotton are used. Of these, I prefer the latter, as the most cleanly and the cheapest. A fresh covering can be used for each patient. I prefer warm water to moisten them.

In most cases it is advisable to make use of both central and peripheral applications, according to indications.

In the treatment of anæsthesias the faradic brush is the most efficient agent. The stimulation produced by it exerts beneficial effects on central nutrition, examples of which will be found in the results obtained by the treatment of locomotor ataxia by this means. The wire-brush electrode should be attached to the negative pole of the faradic battery, and a current of sufficient strength to stop short of being painful applied. The brush is passed over the anæsthetic areas, the sittings ranging in duration from five to fifteen minutes.

In cases of neurasthenia and hysteria the forms of applications devised by Beard and Rockwell, and called by them central galvanization and general faradization, are exceedingly useful.

The object of *general faradisation* is to bring every portion of the body in turn under the influence of the faradic current. The procedure is practiced as follows: The negative pole is attached to a large copper-plate electrode, covered with a flannel moistened in warm water. On this are placed the patient's feet. The positive electrode is attached to a large sponge electrode. The seance is begun by the application of a weak current to the head. This is done through the medium of the operator's body. He takes the positive electrode in one hand, while he applies the other to the patient's forehead. He is thus enabled to judge by his own

sensations of the strength of current passing. After one minute he changes the position of the hand used as an electrode to the vertex. He next places the positive pole over the back of the neck, where it is retained for four minutes. Next it is passed up and down the spine for three minutes. Then it is placed over the epigastrium for three minutes more. Finally, the seance closes by brushing the limbs with the electrode for two more minutes. The treatments should be repeated every day. The results obtained are increased vigor, improved sleep and increased appetite.

Central galvanisation consists in placing the negative electrode at the epigastrium, while the positive pole is applied to certain parts of the head (chiefly the vertex), to the sympathetic and pneumogastric in the neck, and down the full length of the spine from the first to the last vertebra. It is claimed to be useful in sleeplessness, neurasthenia, dyspepsia, etc.

Galvanisation of the cervical sympathetic is a method of application designed to act on the circulation and nutrition of the brain. De Watteville and others have attempted to show the inutility of the procedure, notwithstanding which it is extensively used. Erb and Moritz Meyer are both ardent advocates of it. A medium-sized electrode is placed over the angle of the jaw, "with its surface directed backwards and upwards towards the vertebral column. The other pole should be larger and applied to the opposite side of the back of the neck, on a level with the fifth, sixth, or seventh cervical vertebra. The cathode is usually placed in front, but not always; the current should be two to five milliamperes, and the duration one to three minutes, the application stable. In certain cases, both sides may be treated successively."

In spasmodic affections, the indications are to secure the sedative influence of the current. Galvanism is here again preferable, although a number of electro-therapeutists announce a strong faith in faradism. The positive pole should be placed over the spasmodically acting nerve, while the negative is applied over its central origin. The current should be a continuous one. The results from the electrical treatment of spasmodic affections have not been satisfactory, if we exclude cases treated constitutionally by general faradization or central galvanization, in which the tonic effect alone of electricity is sought.

In some cases of spasmodic affections, central applications only are useful, *e. g.*, in chorea and epilepsy. Many claims have been made, concerning the value of electricity in the late rigidities of hemiplegia. It has been recommended that galvanism be applied to the contracted muscles, while faradism is used on their opponents. My results from this mode of treatment have been very unsatisfactory. In the various forms of tic, both galvanism and faradism have been recommended, but the majority of neurologists have obtained negative results in very many cases. My own experience has been equally disappointing.

Of late years, Corning and Peterson, of New York, have made some efforts looking to the practical application of the cataphoric action of the galvanic current. If, for example, the positive electrode of a galvanic battery be thoroughly moistened with a solution of cocaine, and the electrodes applied to the body, the surface covered by the positive will be found in a few minutes to have become anæsthetized from the drug used. In the same way, iodine, on the positive electrode, has been used in the treatment of parenchymatous goiter. It has been proposed to extend this method of drug administration to the local medication of diseased nerves. The subject is still in its infancy, and is in need of further investigation.

Very often, prompt results are obtainable in hysterical and neurasthenic cases from purely psychic influences. The patient expects the battery to do her good, and it does. While this is a strictly legitimate use of electricity, the part played by mental suggestion must be recognized, and the curative effect credited to it, and not to the battery.

Hydro-Therapeutics of Nervous Diseases.

Water taken internally, or used externally as douches, baths, and packs, is a most valuable adjuvant in the treatment of nervous as of other diseases. Successful results, however, are only possible when careful attention is paid to technical details. Considering the external use of water, let me say at the outset that by means of it one can obtain either stimulation or sedative effects at will. These results are, as a rule, secured by reflex action through the stimulation of the skin, or influence over the cerebral and spinal circulation through the vaso-motor nerves. In a general way, it may be said that cold baths exercise a stimulating, invigorating effect; warm baths, especially if prolonged, are relaxing, fatiguing, and soporific. They soothe nerve-irritability.

Proceeding now to the several methods of administering baths, etc., I will speak first of the "HALF BATH." The bath-tub is filled with water at a temperature from 50° to 75° F. to a depth of about eight or ten inches. The temperature of the water must be varied according to the demands of the case. The patient seats himself in the tub, while an attendant dashes the water against him, and rubs him vigorously. Cold water is added to the bath from time to time, until the patient's teeth chatter. This method of bathing gives the stimulating effects of the cold water, the mechanical effect of the water thrown against the patient, and the beneficial influence of the frictions.

The Cold Douche.—The value of the cold douche depends upon the application of the cold water under sufficient pressure to obtain the mechanical effects of the strong impact. A much colder temperature can be tolerated by this method of bathing than of any other. Its effects on the system are powerfully tonic. The douche at a lower temperature

should never be prolonged to any greater time than one minute. The colder the water, and the shorter its application, the more complete the reaction. The effect of the douche is to deepen respiration, improve circulation, and increase secretion. It aids also in the absorption of pathological products. No remedy is a greater invigorant. It has been shown by actual experimentation, that the cold douche increases muscular power threefold. The Scotch douche consists of the alternate douching of the body with hot and cold water. It is applicable more particularly to the absorption of pathological products, hence to chronic joint troubles. The douche is indicated, says Peterson, "in lethargic and hysterical forms of insanity, where there is sluggishness of the intellect, apathy, stupor, catalepsy, etc., in melancholic cases, and in all cases where there is anæmia, chlorosis, or gastric disorders."

The **cold spinal douche** is a measure that I have used with a great deal of satisfaction in neurasthenic states, especially those arising from sexual excesses. Immediately on rising in the morning, the patient is directed to go to the bathroom, to run a few inches of warm water into the bath-tub, and to place a board across the sides of the tub. He now takes a position on the seat thus improvised, with his feet in the water. He then proceeds to douche the spine with water from the cold water spigot. The operation should not continue more than from thirty seconds to one minute.

The **wet pack** is practiced as follows: A large woolen blanket is spread out upon the bed. Over this is placed a sheet wrung out in water at a temperature of from 50° to 70°. The patient then lies upon this, while the attendant proceeds to wrap the sheet about him, rubbing it down with his hands, so that it comes in thorough contact with the patient's body. The arms should be held somewhat from the side, so that the sheet may be inserted in the space, and keep cutaneous surfaces separated. Next, the patient is enveloped in the blanket, which should be so wrapped about him as to exclude the atmospheric air most thoroughly. The duration of the pack should be from one-half hour to an hour. The wet pack should be followed by a half-bath, or a cold ablution to restore tone to the relaxed vessels. The hot wet pack is a powerful hypnotic agent, and may be prolonged to two hours, or if the patient falls asleep in it, until he awakens.

The **prolonged warm bath** consists in the prolonged immersion of the patient in water at a temperature of 90° F. Its successful practice requires careful attention to the warm water supply and escape pipes. "The calming effect of the bath has been utilized by Reiss in the treatment of over 1,000 cases of various types of brain and spinal diseases. There is no thermic effect upon the cutaneous nerves, no change of temperature, blood-pressure, cardiac action, or respiration, only a calming effect, due

probably to the removal or diminution of the usual cutaneous irritations, which ordinarily are conveyed to the internal organs, especially to the nervous system, giving rise to a regulation and quieting, chiefly of the central nervous system. Cases of serious disturbance of the latter thus become amenable to treatment. Reiss has treated paraplegia of the lower extremities, paralysis of the bladder and intestines, etc., occurring in tabes, myelitis, and similar diseases, which usually demand the use of the bath for the greater part of the day, on account of the bed-sores. The latter usually healed very rapidly, if not too far advanced. But in addition, many symptoms, such as local spinal pains, eccentric pains of the extremities, distressing contractures, reflex convulsive movements, were alleviated. In similar manner, these permanent baths acted in cerebral troubles, apoplexy with chronic meningitis, hemiplegias, and with unilateral contractures also, and upon general hyper- or anæsthesias, cerebral excitement and delirium, in the most favorable manner. The calmative influence produced by neutral baths upon the condition of excitation of the brain is the chief basis of the therapeutic effect in these nervous diseases. The regulation of the peripheral irritation alone seems to suffice for the explanation of the effect; especially is the relief of insomnia a marked result of these baths." "In not a small number of cases of disease of the brain and spine, treated for weeks by permanent baths, a decided improvement of the diseased condition was noted. Motor and sensory paralysis, ataxia, and related symptoms yielded readily in these cases after failure of other treatment." "Reiss gives the history of a case of compression myelitis, in which the patient spent the whole day in the bath, the night in bed, and which resulted after eight and a half months of constant treatment in complete restoration of the function of the cord!" (Baruch.)

No better summary of the effects of hydro-therapeutics of nervous disease, can be given than the following from Peterson:

"*Anæsthesia* (cutaneous). Short cold jet and fan douches of strong pressure to the anæsthetic areas. Temperature, 50° to 70°. Duration, one minute. Daily.

"*Angio-paralytic Hyperidrosis of the Feet*.—Prolonged cold foot-bath with chafing, or fan douche of cold water to the feet. Temperature, 60°. Duration, twenty minutes for bath, five minutes for douche.

"*Chorea*.—Cold plunge beginning at 90°, daily reducing until 70° is reached.

"If anæmic, spinal spray, fan douche or jet, at first warm until patient becomes accustomed to them, then gradually reduced to 60° or 50°.

"*Epilepsy*.—Cold shower-baths and cold sponge-baths daily are beneficial. The shower-baths should be rain-like in character—that is, not too forcible. In many cases a morning and evening bath (half-bath) proves very serviceable. When there is evidence of hyperæmia and increased

blood-pressure in the head, the cold cap is useful. While these are the general indications for hydro-therapy, certain measures are often of use at the time of the seizures. During a fit of *status epilepticus*, it will be observed that there is one of two conditions present: either the face is pale and there are signs of brain anæmia, and in this case warm wet compresses should be applied to the head and genitals, accompanied by friction of the trunk upwards, the body being placed with head low and arms uplifted; or there is turgescence of the vessels in the head, the face is red, the carotids beat strongly, and under such conditions a contrary procedure is indicated—cold compresses to the head, neck and genitals, strong wet beating of the feet with a high position of the head. Daily applications for thirty seconds.

"*Headaches, Neuralgias and Migraines.*—If anæmic, heating cephalic compresses (wring out thin linen bandages in very cold water; wrap head in capeline manner, and cover with one or two layers of dry linen or flannel). Apply at bedtime. Upon removal, envelop head in dry cloth and rub it dry.

"If hyperæmic, leg bandages (a piece of toweling a yard long is dipped in cold water at one end—one-third—thoroughly wrung out and wrapped closely about each leg, so that the wet surface is next the skin and the dry portion envelops the wet two or three times. Or, wet stockings may be put on and covered with dry towels). These are applied at bedtime and retained through the night.

"*Hysteria.*—For erethistic type: Wet pack, 60° to 70° for one hour or more, followed by massage (Putnam-Jacobi); or the rain-bath at 75° to 65° for thirty-five seconds daily at twenty pounds pressure (Baruch). For depressed type: Cold effusions while standing in warm water, or hot-air bath, followed by rain-bath for thirty seconds at 85°, daily reducing until 65° is reached, this to be followed by spray douche for five seconds at 65°, or jet douche for three seconds at 65° to 55°. Reduce douche gradually to 50° or less, increasing pressure from two pounds to thirty (Baruch).

"*Hyperæsthesia* (cutaneous). Long-continued cold douches to affected area. Daily, twenty minutes, at 70° to 80°.

"*Insomnia.*—Wet pack.

"*Impotence.*—Brief cold sitz-baths. Daily, 56° to 64°, one to five minutes. The psychrophore, *i. e.*, application to prostate of cold by a rubber condom or bladder secured over a rectal irrigator *ou double courant*.

"*Incontinence of Urine.*—In paresis of sphincter or detrusor, brief cold sitz-baths, daily, 56° to 64°, one to five minutes. Cold rain-baths (50° to 60°) and douches as general tonics. In spasmus detrusorum vesicæ, on the contrary, prolonged lukewarm sitz-baths, daily, thirty to sixty seconds, 70° to 90°.

"*Locomotor ataxia*.—Prolonged warm baths, five to twenty minutes, 86° to 96°. Hot-air baths to lower extremities, followed by affusions or douches, 60° to 70°.

"*Neuralgia of all Types*.—Hot-air bath to perspiration, every other day, followed by gradually lowered douches.

"*Sciatica*.—Hot-air bath until patient perspires, followed by cold plunge or douche, gradually lowered to 65°.

"*Spinal Cord Affections*.—In various chronic diseases of the spinal cord, the daily half-bath, 65° to 82°, six to ten minutes' duration, with affusion and chafing, will be found useful. In some cases of compression and injury to the cord, in myelitis and the like, where there is paralysis of the rectum and the bladder, and formation of bed-sores or trophic lesions, resort may be had with advantage to the permanent bath. A sheet fastened in a bath-tub makes a hammock, in which the patient lies at first for an hour or so daily; later, all the time, except at night, when he is put to bed. The water is kept at a temperature agreeable to the patient (88°).

"*Spinal Irritation*.—'Douche filiforme' as a rubefacient and epispaetic along the spinal column; or rain-baths, 65° to 85°, and douches.

"*Spermatorrhœa*.—Cold sitz-baths, five to twenty minutes, 50° to 70°, daily, at bedtime; contra-indicated in sexual irritability and active pollutions, where prolonged warm or hot sitz-baths, at 90° to 98°, should be used."

Massage.

Massage has a special value in nearly all nervous diseases. In the majority of cases it serves a two-fold purpose: It gives the advantages of exercise, while the body is maintained at rest, and it promotes nutrition. It becomes almost a necessary adjuvant in functional nervous conditions in which overfeeding combined with rest forms the principal therapeutic means, and in organic nervous diseases generally to promote local and general nutrition. In all cases, it should be practiced by a skilful masseur. Massage performed by one of the family is without value; indeed, it is almost worse than useless. In many cases it is as important to consider the social as well as the scientific qualifications of the operator selected. The introduction into the sick-room of a manipulator possessed of poor intelligence and an injudicious tongue, is fraught with harm. Especially is one such harmful when claim of possession of a special magnetic touch is made. Massage must be remembered as an agent to be used on strictly physiological principles, and not as one of occult powers. In every case it should be the physician's duty to see for himself that the work is being done properly, should the masseur or masseuse, as the case may be, happen to be unknown to him.

Hypnotics.

Hypnotics are, as a rule, very much abused remedies in the treatment of nervous states. They are probably used much more frequently than necessity demands. Sometimes all measures fail, and then they become a positive necessity, sometimes acting as a mere makeshift, and at others doing positive good. When sleeplessness arises from pain, analgesic remedies are permissible. Of these, more will be said presently, when speaking of that class of drugs. The pure hypnotics fail utterly to produce sleep arising from this cause. Of hypnotic remedies, I am satisfied that *Sulphonal* is certainly one of the most efficient. I have heard physicians decry the remedy, but have found usually that it has been given by them in a very inefficient manner. The initial dose of the drug should be fifteen grains. When administered in the form of a drug, it acts very slowly and unsatisfactorily. It is my custom to dissolve the dose in two ounces of boiling water, and this solution the patient takes as soon as it is cool enough to swallow. In the majority of cases it produces a good night's rest. Very frequently, the following day is marked by a somewhat annoying drowsiness. I do not, as a rule, think of repeating the drug again until the third night, when the medicine is administered as before. In bad cases, it may be necessary to repeat the dose every alternate night; indeed, I have often been obliged to do so. I have never thus far given thirty grains of the drug at a dose, although I would not hesitate to do so should occasion require; but I would not in that case give it oftener than every third night. It will be found, as a rule, that the effect of the drug as a sleep-producing agent is manifest each of the nights between the doses. *Sulphonal* does not act very satisfactorily in sleeplessness with mania, though even here a very good result is often obtained.

There is, it is true, another side to the action of *Sulphonal*, but proper care in the administration of the drug, I am satisfied, will obviate any danger from that source. It should be borne in mind that before physicians use drugs of this and similar character in practice, they should acquaint themselves thoroughly with their physiological action. Then, I am satisfied, they will obtain good and avoid deleterious results.

It is true that the number of cases of *Sulphonal* poisoning is fairly large. In fact, I collected the reports of a number of these for systematic study. The hæmatoporphyrinuria and other serious symptoms in all of these cases were plainly the result of absolute ignorance of or utter defiance of all precautions which are universally advised when prescribing *Sulphonal*. How can we blame a drug when it is misused?

Veronal has been a favorite hypnotic with me of late years. Its sedative action is secured much more quickly than is that of *Sulphonal*, and if it is not given in excessive doses, it does not leave any unpleasant effects,

even though it is repeated nightly. Like Sulphonal and its congeners, it does not seem to have any influence in producing a drug habit. I have not tried it as a hypnotic in acute mania, and doubt very much if it will prove any more efficient in this disease than other remedies of its class. The regular dose is seven and a half grains, Fifteen grains can always be taken with safety, though such a dose is usually unnecessary.

Hyoscine hydrobromate is a hypnotic, useful in maniacal cases. It is best administered hypodermically in doses ranging from the one to two-hundredth to the one one-hundredth of a grain. In these doses it may be repeated at intervals not shorter than once in four hours; very often, even in violent cases, three times daily are sufficient. This drug is a peculiar one in a very important respect. The desired effect is not always obtained from the same dose. In some patients it is necessary to give the maximum dose at the minimum interval; and, in others, the minimum dose at long intervals is required. Very often, when not properly administered, it serves to intensify instead of modify the mania. The more the condition approaches that of an active mania, the better will the drug act. Some cases resists its action, as well as the action of all other hypnotics. Then I have found that a combination of one-hundredth of a grain of *Hyoscine* with one-quarter of a grain of *Morphia*, hypodermically, will act surely. The sleep produced by this prescription is sometimes so profound as to be almost alarming. Coming so quickly after perhaps days of wild furor, and continuing perhaps for twelve or fourteen hours without interruption, physician and family are alike alarmed, unless forewarned of the medicine's power. This combination I very rarely repeat; certainly, never oftener than alternate nights.

Increasing experience with the *Hyoscine-Morphia* combination leads me to be very forcible in warning against its unnecessary administration. Especially would I advise against it in alcoholic subjects. True, it will succeed in quieting the patient, but inasmuch as I have had two deaths in degenerated alcoholics (whether due to the drugs, I will not pretend to say), I nevertheless feel that we will act wisely if we bide our time and put up with the ravings of the patient until sufficient time has elapsed to secure full elimination of alcohol from the system. In acute mania, on the other hand, I have never seen any unfortunate results, though I would postpone its use to the last moment.

Trional and *Tetronal* are two hypnotics which at one time it was thought would replace *Sulphonal*. Clinical experience has not shown either of them superior to the latter remedy. Still, they may be used when, as sometimes happens, *Sulphonal* fails to act. Their dose and method of administration is the same as for *Sulphonal*. They have a sedative as well as a hypnotic action.

Chloralamid is a hypnotic which may be administered when it is desir-

able to change drugs for a time. Its dose is fifteen grains each evening. From my use of it I have not been satisfied that it is any more efficient than others, and in many cases, does not act as thoroughly.

Chloralamid finds its most useful sphere as a hypnotic in cases of sleeplessness which are due to grief or undue nervousness. I have never observed any unpleasant after-effects.

Chloral, I would not think of advising in any dose as a pure hypnotic, excepting in acute cases, in which cardiac action is good. This drug has a depressant action on the circulation, and if used persistently and in large doses may do harm. In chronic cases, it can readily lead to the formation of the *Chloral* habit. Still, in cases of weak heart I do not think, in small doses, it is as depressing as *Sulphonal*. As a temporary palliative, it may be capable of good service.

Morphia and the *Opium* preparations generally are to be condemned as hypnotics.

Rest.

No agent in the treatment of nervous diseases possesses more value than rest; none is so universally neglected. The professional tendency is to treat cases of nervous diseases, whether functional or organic, inflammatory or degenerative, by routine exercise. Patients are ordered to keep active regardless of the apparent or concealed harm being done thereby. If they feel worse by reason of the prescription, they are told that they would have been still worse had they been kept at rest. Popular prejudice, moreover, is against rest as a remedy, for inactivity is held to be "weakening." When ordering a patient to rest for a prolonged period, one is at once treated to the objection, "Will not absolute rest in bed weaken me?" "When the time comes for me to get up will I be able to do so?" To both of these questions we can give a ready reply that rest, when indicated, is beneficial, and that it will not do any harm. It is true that a progressive degeneration may increase during the stay in bed as it did out of it; but it does so in spite of rest, and not because of it. While thus advocating rest as a great remedy one must not go to the extreme of condemning exercise. Both agents are extremely useful in their places.

What are the indications for rest? It is my opinion that practically all organic affections are best treated by rest, either of the functionally disabled part or of the entire body. Exceptions should be made of those cases in which the disordered function has arisen from lack of use. The tendency to treat such incurable diseases as the spinal sclerosis (locomotor ataxia, spastic paraplegia, etc.) with rest has been growing of late years. The time is as yet too early to enable one to speak positively as to the results; but thus far patients have received marked benefit. Even paralysis agitans, a disease hitherto obstinate to the best directed therapeutic endeavors, seems to be helped by it. In some cases, the indications are for

local rest mainly. An example of this is seen in sciatica, in which the rest must be enforced by the application of splints.

Pain is an absolutely certain indication of rest, and this is true whether it be of neuralgic or inflammatory origin.

In functional nervous diseases, one must be guided by indications in ordering rest or exercise. The previous habits of the patients, the influence of activity, and the state of the digestion, afford the main indications. If the patient is of a sedentary habit, if exercise benefits, or if his digestion is most excellent, exercise is most certainly called for. If, on the other hand, he has been leading an active life, he is easily fatigued, or his digestion is feeble, rest is most certainly the remedy.

To maintain a good health standard in the face of absolute rest is sometimes a difficult matter, unless a substitute for exercise be afforded. Massage here comes in as an invaluable adjuvant.

If exercise is to be ordered, its nature often requires most explicit directions. Here, every circumstance must be carefully weighed, and the results of the prescription studied carefully. Horseback or bicycle riding, billiards, swimming, walking, driving, club-swinging, boxing, or Swedish movements, each has its place. I believe that as far as possible the exercise should be adapted to the tastes of the individual, so that while the body is active, the mind is rested. Care should be taken, too, that exercise in any one particular direction is not overdone.

Remedies in Diseases of the Nervous System.

In presenting the general indications of a few remedies in more common use in diseases of the nervous system, one cannot refrain from making some remarks concerning the results to be expected. The physician having to do mainly with acute affections has been trained to expect quick results from treatment. If his remedies have not succeeded within twenty-four hours he feels inclined to make a change, unless his indications are clear, and no other course is possible. With diseases of the nervous system, we are dealing with the most obstinate of all chronic diseases, obstinate in resisting both palliation and recovery. In cases of this class we must be satisfied with doing our best, and this best is often short of our ideal. In no case do we have specifics, giving rapidly curative results, but on the contrary oftentimes we must be satisfied with stopping the course of a progressively fatal or disabling disease. The great mistake made by the majority of practitioners in this sphere of work is that of trying to effect the impossible, and thereby doing much harm.

The remedies here presented might be greatly extended, but space forbids. Other medicines will be referred to in the chapters devoted to the special diseases of the nervous system.

In very many cases, we will find it to the patient's advantage to dis-

regard the nervous trouble altogether, and apply our therapeutic measures directly to the improvement of his constitutional condition.

Hyoscyamus has as important indications its mental state and convulsive phenomena. The former necessitates its use in delirium of various types in acute mania. The patient is decidedly talkative, jumping from one subject to another in the most disconnected manner. He is full of insane fears; he is suspicious of everybody and everything; fears that he will be poisoned. Often there is a highly erotic state, which leads to the most indecent behavior, even on the part of the most chaste and refined persons. In delirium tremens it is exceedingly useful when indicated by the violence of the symptoms. The use of the alkaloid, Hyoscine, has already been referred to (see page 806).

In convulsive affections, *Hyoscyamus* is mainly useful in epilepsy, symptomatic convulsions, as those of the puerperium and infancy, and in chorea. The principal indication in each of these is the angularity of the abnormal movements.

Ignatia is useful mainly in functional nervous states, indicated by the peculiar *Ignatia* temperament, and etiological factors at work when it is the remedy, *i. e.*, fright, violent emotions, etc. Thus it is called for in epilepsy, eclampsia, hysteroid seizures, resulting from fright or grief. The headache is characteristically limited to a small spot and has been described as "clavis." It comes on under the influence of any emotion, and often ends with vomiting. It is relieved by copious urination.

Of late, *Ignatia* has come into use among old-school physicians as a remedy for hysterical states. Starr* recommends it in doses of $\frac{1}{1000}$ of a grain as efficient in hysterical and neurasthenic states.

Gelsemium in physiological doses produces very marked motor and sensory paralyzes. These include ptosis, diplopia, difficulty of deglutition, dilatation of the pupils, amblyopia, labored respiration, and feeble action of the heart. When the doses taken are larger and the action of the drug correspondingly more profound, there are, in addition, staggering gait, loss of muscular power all over the body, and diminution of sensation. The speech becomes impossible owing to paralysis of the muscles involved in that act, the heart-action more feeble and intermittent. The general paralytic effect of the drug, so far as its action outside of the distribution of the cranial nerve is concerned, shows that the drug acts on the motor and sensory portions of the spinal cord.

These effects of *Gelsemium* suggest its use in quite a variety of paralytic affections. In ptosis (recent cases) it is our principal remedy. It is invaluable in diplopia following diphtheria; in fact, in post-diphtheritic paralyzes generally. Owing to the staggering gait which it is capable of

* *Organic and Functional Nervous Diseases.*

producing, it has been recommended in locomotor ataxia, but I fail to see any reason why it should prove useful in this disease.

Gelsemium is a remedy for loss of power over the bladder in old people.

It may be used successfully in sexual weakness, when, notwithstanding strong erections, no emission takes place.

Among spasmodic affections, it is useful in writer's cramp, and spasm of the glottis. It has been highly recommended by allopathic authorities as a physiological remedy for spasmodic affections. In these cases, it is necessary to push the drug until it produces symptoms.

Gelsemium is well indicated in quite a variety of headaches. In hemicrania it is the remedy when the attack passes off with a flow of profuse urine, and nausea and vomiting bring relief. The pain is situated mainly in the back of the head, and is accompanied by soreness of the muscles of the neck. Often the pain extends forward through the head to the eyes. It is a useful remedy for the headaches with suffused face of the climacteric period.

In prosopalgia it is the remedy when the pain is accompanied by loss of power over facial muscles, or when the trouble has arisen from exposure to cold. The face under such circumstances is often a suffused red.

Argentum nitricum is suited to quite a number of both functional and organic diseases. Among the former, neurasthenia with mental depression stands prominent. Physical and mental weakness are characteristic. The exciting causes of the difficulty are usually excessive indulgence in alcohol and venery. Seip, of Pittsburg, reports cases of hypochondriasis due to these causes cured by this remedy. Gastric symptoms are often present, and by many are regarded as necessary symptoms to the successful application of the drug. These consist of flatulent distention of the stomach, especially aggravated after eating; gastralgia, with flatulent distention, which interferes with the heart's action. In some of these cases it may be necessary to use the medicine in large doses, in order to secure its local effect on the stomach. It is very often useful in pure brain-fag. Mental anxiety and profound melancholy are often present. Among organic diseases, those characterized pathologically by sclerosis come especially within the province of Nitrate of Silver as a homœopathic remedy. In locomotor ataxia it is unquestionably a most useful remedy, and is thoroughly indicated symptomatically. It is less useful in other forms of sclerosis, still it may be prescribed with good effect in disseminated sclerosis of the brain or cord, or both. In epilepsy it has long enjoyed a good reputation in both schools of medicine. The special indications for its use, as given in our text-books, do not strike me as at all practical. It seems best adapted to cases accompanied by the gastric symptoms above described. In the chronic stages of post-diphtheritic paralysis, it has proven useful, being

indicated especially after Gelsemium has accomplished all of which it is capable. It may also be used in the chronic forms of neuritis, especially those of the degenerative variety.

Gold—The preparations of gold used in medicine are the triturated metal, the Chloride of Gold or Aurum muriaticum, and the double Chloride of Gold and Sodium, or Aurum muriaticum natronatum. This remedy has far more extended uses in medicine than is ordinarily believed. In depressed mental states, melancholia with suicidal tendency, it has been used successfully by both schools of medicine. Hughes believes that the melancholia is dependent upon liver or testicular disturbance. While the drug will undoubtedly prove curative in many cases, I think that that author limits the sphere of usefulness of the remedy altogether too much. It is indicated in mental depression with disease of the testicle, either atrophy or hypertrophy, diminished sexual desires, cirrhosis of the liver, etc. It may also prove curative in primary mental disorders, and in hypochondriasis associated with gastric disturbance.

It is a remedy also for syphilitic states, more particularly, however, for sclerotic changes, ulcerative conditions of the mucous membranes, bone lesions, etc., than for the active recent infiltrations for which Iodide of Potassium is a sovereign remedy. Mercurialization is an additional indication for this medicine in syphilitic cases. Allen holds that it is in syphilitic melancholia particularly that Gold finds its sphere of usefulness, advocating Arsenic in the non-specific cases.

In all pathological conditions characterized by an overgrowth of connective tissue, whether affecting the brain, spinal cord, kidneys, liver, heart, etc., this remedy is indicated. Hence, among nervous diseases it is called for in locomotor ataxia, disseminated sclerosis, and other scleroses. Optic neuritis and cerebral congestions are good indications for the remedy.

Among functional nervous diseases, Gold is called for in hysteria, especially when associated with hyperplasia of the uterus and ovaries.

It is strongly advocated by Bartholow in nervous dyspepsia, when there are "red glazed tongue, epigastric pains increased after food, and a tendency to relaxation of the bowels; also a duodenal catarrh and biliary catarrh, and jaundice." Vertigo accompanying gastric disturbance is an additional indication.

It may be used successfully also in neurasthenic states characterized by congestive symptoms.

The most efficient dosage is the 3x of Aurum mur., or from one-twentieth to one-hundredth of a grain of the double Chloride of Gold and Sodium, repeated three or four times daily.

Actea racemosa, also known as *Cimicifuga racemosa*. This remedy produces restlessness and fidgetiness, and in this condition we find one of its important indications. It is useful in chorea, especially in cases occur-

ring in conjunction with a rheumatic history. In hysteria, with general nervousness and restlessness, it is an important remedy. It is indicated in delirium of various origins, *e.g.*, in delirium tremens and in puerperal mania. The patient exhibits marked loquacity, with strong tendency to change from subject to subject.

Nervous troubles, associated with a rheumatic constitution, find a remedy in *Actea racemosa*, *e.g.*, rheumatic torticollis, pleurodynia and neuritis.

It is also valuable in nervous disturbances associated with disorders of the female genital organs, *e.g.*, infra-mammary neuralgia, headache and climacteric neurasthenia, the latter especially when accompanied by a sinking at the epigastrium.

The headaches are characteristically at the vertex or the occiput. The former is usually in conjunction with uterine disorder; the latter from some reflex disturbance or meningeal inflammation.

The neuralgias in which *Actea* is useful are quite varied, affecting any nerve joint, but agreeing in being of reflex or rheumatic origin.

Aconite and its preparations are used in quite a variety of acute and chronic nervous diseases. Among the former class, it is indicated in those of inflammatory character in their very early stages; especially is it called for in meningeal irritation, or even inflammation arising from exposure to the sun. In these cases the heart also bears the brunt of the trouble, and exhibits both rapidity and weakness of action.

Various motor and sensory phenomena, arising from exposure to cold winds, come within the province of *Aconite*. Neuralgia in various portions of the body, and paralyses arising from inflammation of a peripheral nerve, hence especially the early stage of facial palsy, frequently find in *Aconite* a curative remedy.

In chronic cases it is useful. Hysterical troubles in which symptoms are brought on by fright, and characterized by a marked sensitiveness to all external impressions, an aversion to all excitement, especially that attendant upon being in a crowd, or living on a busy thoroughfare, indicate it.

In chronic forms of neuralgia it is as useful as in the acute. The drug seems to have an especial affinity for the fifth cranial nerves, and is curative in many painful affections involving it, especially when associated with numbness and tingling. Even in cases dependent upon degenerative changes it is a great therapeutic agent. No remedy acts better than it in the *tic douloureux*. Here we must often have recourse to the alkaloid *Aconitia*. In using this particular remedy, we must make certain that a reliable preparation is at our disposal, that of Duquesnel being universally acknowledged as superior to all others. The power of the remedy must be borne in mind. One should never begin with an initial dose of more

than one two-hundredth of a grain twice daily. Then, the frequency of the administration may be increased each day until physiological effects ensue, when the remedy may be continued at somewhat longer intervals. In gouty cases the Nitrate of Aconitia, in doses ranging from one three-hundredth to one-thousandth of a grain, three or four times daily, may be prescribed with great benefit.

The anæsthesias, which frequently precede apoplectic seizures, afford an indication for Aconite, by which the impending attack may often be averted by reason of the remedy's great control over the circulation. In apoplexy itself it is useful when the circulatory symptoms are appropriate.

The spasmodic symptoms calling for Aconite consist of local spasms and rigidities and occasionally tetanus.

Alumina enjoys a favorable reputation in diseases of the spinal cord, and especially in *tabes dorsalis*. Paralytic phenomena are marked in the symptomatology of the drug. The patient complains of paralytic weakness of the lower extremities. The legs feel heavy; or, instead of this paralytic condition, there may be inco-ordination of gait, so that the patient is unable to walk in the dark without staggering. Other abnormal motor phenomena observed under *Alumina* are tremor of the limbs, jerking and twitching of the limbs, and involuntary movements of single parts. Abnormalities in sensation may also be noted. The extremities go to sleep readily. Thus the nates go to sleep when sitting, and a similar sensation may be noted in the arms. Sensation in the soles of the feet is very much blunted, giving to the patient the sensation that he is walking on cushions, or that his feet are padded. The heels become numb while walking, a sense of tightness in the arms, as if from cold, may be complained of. Pains of diverse characters may appear in the back. In one case it is as if a red-hot iron were being thrust into the spine, while in others it is as if the back had been beaten, and in still others it is of a gnawing character. The paralytic action of *Alumina* extends even to the rectum and the genito-urinary organs. There is marked inactivity of the rectum, even a soft stool requiring inordinate effort for its expulsion. In other cases it is the function of sensation in the rectum that is impaired, as shown by the lack of desire or inability to move the bowels until there is a large accumulation of *fæces* in the rectum. Symptoms referred to the eyes, as ptosis and diplopia, may appear.

Lathyrus has a remarkable influence over the spinal cord, notwithstanding which it has been but little used in its diseases. The symptoms arising from poisoning with this substance have been detailed in the article on lathyrism. It is sufficient to repeat that these have led to the use of the drug in diseases of the spinal cord characterized by rigidity and excessive tendon jerks. Success has not been flattering, but then these cases are of such a nature that no treatment is likely to give satisfactory results.

Opium.—The use of *Opium* and its preparations for the relief of pain will be commented upon hereafter. The drug may be used homœopathically for but a few nervous conditions. In the various forms of coma it is indicated, but good results cannot be expected, owing to the very serious nature of the majority, and the necessarily fatal character of the remainder of the cases in which this symptom is present. It is used by both schools of medicine in the various manifestations of uræmia. In nervous disturbances from fright (convulsions) it has been successfully used, especially in children. It is applicable to the nervous disturbances of drunkards, especially apoplexy. Of the local paralyses calling for it, paralysis of the tongue and pharynx have been especially mentioned.

The use of the remedy in mental diseases has been altogether too much neglected. It is one of the very best medicines for the cure of depressed mental states. It should here be given in the form of tincture in doses of from five to ten drops three times daily, or as *Morphia*, in doses ranging from the sixteenth to the thirty-second of a grain at like intervals.

Glonoïn.—The therapeutic virtues of *Glonoïn* as a "nervous" remedy find reason in its action on the circulation, especially on that of the brain. It produces a high grade of cerebral congestion, with intense headache, violent throbbing of the superficial bloodvessels, etc. It is indicated in epilepsy, neuralgia, and acute mania with violent rush of blood to the head. It is an invaluable remedy in the bad effects of exposure to the heat of the sun. It has a strong action on the mind, producing confusion of thought and loss of the sense of location, and has been employed in insanity with hot head, throbbing vessels, staring eyes and rapid pulse, especially when the same has been caused by exposure to the sun. It has been used successfully in meningitis from the above-named cause or resulting from violent emotions. It is our best remedy in cerebral vomiting. It also occupies a very useful place in the treatment of chronic renal affections and arterio-sclerosis, and exerts a wonderful action in relieving the nervous disturbances arising in conjunction with these troubles. For the headaches, convulsions and congestions, it is best used in the third centesimal dilution. In arterio-sclerosis and chronic interstitial nephritis it acts best when given in doses of one drop of the first centesimal solution three times daily. It may be advisable later to increase the dose by giving it more frequently. Some few patients cannot tolerate this initial dose, and with them it may be wise to reduce it to one-half drop to begin with.

Asafetida finds its curative sphere in functional nervous diseases, as hysteria and hypochondriasis. In its action on the digestive tract it excites a reverse peristalsis, hence it produces the globus hystericus, a bursting feeling upwards in the abdomen, etc. In hysterical conditions with tympanitic distention of the abdomen, and thoracic oppression and hypochondriasis arising therefrom, it is very efficient, as it is also in gastralgia

with the same constituents. It may also be used successfully in hysterical cough and hysterical convulsions. Especially is it applicable in cases associated with menstrual suppression. The dose must be varied according to the case. In some cases but one or two drops of the tincture are sufficient; in others it may be necessary to give thirty or more. The offensive taste of the drug need not be disguised, as in hysterical patients it is probably of some therapeutic advantage.

Sugar has not an extended use in diseases of the nervous system. It is indicated symptomatically in a number of conditions in which anxiety or nervousness with dread of a downward motion is present. Of late, its use in epilepsy has been revived. It is here given in doses ranging from fifteen to thirty grains three times daily. The initial dose should, however, never be larger than fifteen grains. In other diseases than epilepsy it may be given in doses ranging from one grain of the crude drug to the third decimal trituration.

Belladonna.—The essential character of the conditions in which *Belladonna* is available is acuteness, either as to the course of the disease, or of the individual symptoms for the relief of which it is administered. Pathologically it is indicated in inflammatory troubles, especially when localized, hence in meningitis, myelitis, cerebritis, neuritis, etc. The more violent the onset, the more likely is *Belladonna* to be the remedy.

The head symptoms exhibit a high degree of congestion, as inferred from the throbbing and distended bloodvessels and the red face and hot head. The headaches are terrific in their intensity, the head feeling as if it would burst. They are aggravated by very slight external causes, as noise, light, etc. They are particularly violent at the back of the head or in the forehead. At times they are accompanied by temporary blindness.

In the early stages of apoplexy it is only indicated when the stupor is associated with evidences of cerebral irritation. In chorea, there is the same cerebral irritability, starting from sleep, or maniacal symptoms. These congestive symptoms serve to indicate the remedy in many cases of convulsions, both of reflex and organic origin.

The *Belladonna* neuralgias are characterized by their suddenness of onset and departure, hence it is indicated especially in the lightning pains of ataxia.

The *Belladonna* patient is of a plethoric build; all of his ailments are of an active type.

Arsenicum.—Arsenicum is used largely in the treatment of nervous diseases by the old as well as by the new school. A study of its uses would seem to indicate that it is a remedy concerning the virtues of which all can unite. Taking first the effects of the drug on the system generally, we find it producing a twofold condition, one of profound prostration or exhaustion, and the other of irritability and restlessness. It is this rest-

lessness that indicates the drug in mental disorders, for it will be found useful in insanity with mental distress, great restlessness, constantly changing from place to place, melancholia and suicidal tendency. Sometimes the distress is characterized by extreme anxiety or fear.

Arsenic produces in both acute and chronic poisoning paralysis, which is now generally admitted to be due to multiple peripheral neuritis. Some cases, however, have been shown to be dependent upon changes in the spinal cord. Both motion and sensation are involved; the loss of power begins in the hands and feet and extends upwards to the trunk. It may be used successfully in the various forms of myelitis and neuritis.

In neuralgia *Arsenic* is useful for both the pure type of that affection as well as for neuritis. The pains are accompanied by anæsthesia, here resembling *Aconite* very closely, but differing from that remedy in that *Arsenic* is especially adapted to chronic cases. Cases arising from malarial poisoning, or occurring periodically, with burning or lancinating pains, generally aggravated by application of cold, though sometimes temporarily relieved thereby, and accompanied by great anxiety and restlessness, find a great remedy in *Arsenic*. Herpes zoster, which is now admitted to be a neurotic disorder, has in *Arsenic* almost a specific remedy, especially when it is accompanied by these burning neuralgic pains.

In delirium tremens *Arsenic* is occasionally useful, especially in patients long addicted to the abuse of alcohol. There are visions of ghosts and other fanciful figures, and general tremor; these symptoms are worse at night, particularly after midnight. The associated pathological changes in the kidneys, heart and liver are further indications for *Arsenic*.

In chorea *Arsenic* is almost the only remedy of the old school. It will be found especially adapted to chronic cases.

Arsenic may be given in tablets of the 2x or 3x triturations, at intervals of from four to eight hours. Malarial cases require the lower preparations. Many times it may be advisable to give it in the form of Fowler's solution, beginning with the minimum dose of three drops three times daily, and increasing the dose by three drops each day, until the physiological effects of the drug, pigmentation of the skin, gastric irritability, and œdema of the eyelids are produced.

Causticum, although in the main a paralytic remedy, must also be remembered as useful in neuralgic and convulsive affections. It is particularly adapted to local paralyses, *i. e.*, those dependent upon inflammation of peripheral nerves; hence in facial palsy. The efficiency of the remedy in rheumatic troubles adapts it especially to cases of paralysis arising from that constitution. In laryngeal palsies, it is indicated when the difficulty succeeds a long-standing catarrh. It has been recommended in paralysis affecting the tongue and pharynx, but it is doubtful if it will accomplish any satisfactory results. Although useful in paralytic weakness of the

bladder, it is doubtful if it will prove curative in incontinence of urine from spinal cord disease. Still, but little can be expected of any remedy in such a condition. Allen and Norton have praised Causticum as a valuable remedy in paralyses of the eye, especially in ptosis of rheumatic origin.

The neuralgia of Causticum occurs most frequently in the face, and is due to change of weather.

In apoplexy, Causticum finds its sphere of usefulness after the initial symptoms have passed away, and the paralysis remains.

Among the convulsive affections it has been most highly recommended in chorea and epilepsy. In the former, especially in rheumatic cases, the choreic movements have been preceded by paralytic phenomena. The movements are worse on the right side, and affect face, arm and leg. In epilepsy, particularly in petit mal, with escape of urine during the attacks.

Farrington reports one case of Menière's complexus of symptoms cured by this remedy.

Ranunculus bulbosus is indicated mainly in neuralgic affections, notably in intercostal neuralgia and herpes zoster. It has been recommended in chronic alcoholism, especially for alcoholic epilepsy, hiccough and delirium tremens.

Bryonia.—The special affinity of this remedy for the serous membranes and liver and stomach, and its curative action in rheumatic affections, explain its sphere in neurological therapeutics. In all inflammations of the meninges of the brain or cord, it is the remedy when the stage of effusion has been reached. Hence it is indicated later than Belladonna. The pains are of a sharp lancinating character and are aggravated by any motion.

The headaches of *Bryonia* are dependent upon gastric or hepatic disturbance, or are of catarrhal origin. Like all *Bryonia* symptoms they are aggravated by motion, even of the eyeballs; the pain usually begins in or is limited to the occiput, and is of the same sharp stitching character. The aggravation is nearly always in the morning. It is very rarely indeed that *Bryonia* is useful in a purely neuralgic pain.

Arnica is found useful mainly in disturbances arising from traumatism, hence in many cases of neuritis, and in pathological conditions of which extravasation of blood is the prominent feature. It is one of our principal remedies in the early stage of apoplexy, when the effused blood has produced marked evidence of compression. It promotes absorption of the clot.

In neuralgic and myalgic conditions, it is especially called for by the aching or sore character of the pain.

Baryta carb. is used largely in the degenerations of old age and the mal-developments of infancy. When, as a result of defective mental development, the child fails to learn to talk or walk, and there are strong

evidences of imbecility, when in old people the mind decays, memory fails, and physical and mental weakness sets in, it is indicated, though very little can be expected from it in the way of curative results.

It is a remedy in the apoplexies of old people and drunkards.

It is one of the few remedies of possible service in disseminated sclerosis. Here it is used by both schools of practice.

Its use may be suggested in epilepsies associated with marked mental impairment, in which the trouble began early in life, as a result of defective cerebral development.

Cicuta virosa has produced in poisoning cases convulsions bearing a very close likeness to those of epilepsy. It should therefore prove useful in this obstinate disorder. There seems to be no distinctive symptoms to enable one to outline the special field to which the remedy is applicable. *Cicuta* also produces marked congestion at the base of the brain, with retraction of the head and rigidity of the neck. This has led to its successful application in cerebro-spinal fever. It is a remedy of possible use in tetanus.

Cannabis indica exerts a most remarkable action on the brain, producing abnormalities of perception of both space and time; a few feet seem like a mile and a minute like hours. Guided by this symptom it has been used successfully in a number of cases of delirium tremens. It has also been given in delirium with great exaltation of mind from other causes, and with success. It is a very efficient remedy in migraine, and is used largely by old-school physicians as a means of lessening the frequency of recurrence of the attacks. To do this, it is necessary that it be given in physiological doses, *i. e.*, about one-quarter of a grain of the extract three times daily.

Cocculus indicus depends for its effects on a neutral principle which it contains—Picrotoxin. It acts upon brain, medulla and spinal cord. It produces a heavy intoxication, vertigo, inco-ordination and diminishing sensibility. In extreme cases, convulsions bearing a most remarkable resemblance to those of epilepsy occur, and are dependent upon the action of the drug on the medulla. A number of old-school physicians, among them Dujardin-Beaumetz and Hammond, have used *Cocculus indicus* in this disease, with, they claim, considerable success. Of late, there has grown up in Europe the custom of prescribing Picrotoxin in combination with Bromides in the treatment of epilepsy. The reported results to date indicate apparently that the combination is a happy one.

Cocculus indicus produces most intense occipital headaches, and this has led to the successful application of the drug to cerebro-spinal fever.

This drug is adapted particularly to weak anæmic women. They often have pain in the small of the back, aggravated when sitting.

It may be beneficial in organic diseases of the spinal cord, when the lesions are in the lumbar enlargement, and there is marked weakness of the small of the back.

Colchicum is indicated in nervous affections only as such arise from the gouty or rheumatic constitution. The class of cases in which it will be found most frequently useful are those of the peripheral nervous system, notably prosopalgia and neuritis. It has been highly recommended for gouty pains in the head, gouty headaches, with pains of throbbing or shooting character, worse on awakening in the morning. I have always used this remedy according to the directions given by Dr. Goodno several years ago, employing the alkaloid Colchicine in an alcoholic solution of one grain to the ounce, administering two drops three times daily or upwards, and increasing the dose until curative or physiological effects were produced.

Conium maculatum is useful in both organic and functional disorders of the nervous system. Among the former, it is indicated in paralyses which start from below and progress upwards, an ascending paralysis, in other words. It is indicated in diphtheritic palsies, whether of the limbs or eye muscles. Sensation is not affected.

The functional nervous disturbances in which it may be successfully used are neurasthenia and hypochondriasis, especially when such have arisen from sexual excesses or disturbances of the ovaries or testicles. It has also been recommended when these troubles have been caused by celibacy. The patient is mentally very much depressed, he is unable to concentrate his mind on his usual occupation. Often, though physically strong, sexual desire is deficient or entirely absent; erection is impossible.

It is adapted to the mental deterioration of old age. Vertigo is a prominent indication. The latter symptom is aggravated by any motion or even by turning over in bed. When Conium is indicated it is caused by old age or by sexual excesses.

The dominant school has made considerable use of Conium of late years as a depresso-motor, giving the remedy in doses sufficient to produce the physiological effects, *i. e.*, weakness of the lower extremities. To do this it must be given in the form of fluid extract. Care must be taken in this case that the preparation is a reliable one, as fluid extracts of Conium vary greatly in power.

Owing to its reputed efficacy in malignant growths, it may be employed in the treatment of cerebral tumors.

Cuprum may be used in convulsive, paralytic, or neuralgic affections. In the former it is especially indicated when spasm of the flexor muscles predominates, and when the convulsion is attended with blueness of the surface, and the paroxysms are followed by deep sleep. It is indicated in epilepsy, reflex convulsions, and uræmia.

Local spasms also find in it a remedy, especially when involving the calves.

It is useful in chorea when that affection has been brought on by fright.

In epilepsy, it is called for when the convulsive movements are general, involvement of the flexor muscles predominates, the attack is ushered in by the epileptic cry, and is followed by a prolonged sleep. The hands are strongly clenched.

The Cuprum meningitis is accompanied by a violent delirium, and is especially liable to complicate the exanthemata, as scarlatina and measles.

The paralysis of Cuprum attacks the flexor muscles, and is accompanied by atrophy. It is well indicated in amyotrophic lateral sclerosis.

It may prove of possible use in paralysis of the tongue, especially when associated with general paralysis of the insane. Speech is stuttering.

In neuralgic affections Copper is of some use, but here the best results will be obtained from the Arsenite, which is valuable in visceral neuralgias.

Digitalis is indicated in nervous affections by the character of the pulse, which must be either slow, or feeble and quick. It is especially suited to meningitis and cerebro-spinal fever. The retinae are congested; the pupils dilated; coma, great prostration with coldness; throbbing headache; delirium.

It is a most excellent remedy for seminal emissions. Here it should be given as Digitaline, as directed by Baehr, two grains of the third decimal trituration each evening.

In disturbed sleep it is oftentimes useful. The patient arouses from sleep distressed with a feeling perhaps that he is falling from a height; he feels anxious and apprehensive; breathing is deep and sighing.

The association of nervous disturbances with disease of the heart or kidneys makes a strong indication for *Digitalis*.

Phosphorus is a remedy of very extended use, being adapted to quiet a variety of functional and degenerative diseases of the nervous system. Its sphere of action may be summed up as follows: Fatty degenerations, vascular changes producing organic disease, exhaustion with morbidly rapid growth, and associated with an abnormal hyperæsthesia.

In neurasthenia and its congeners, it is indicated when the condition is caused by excessive work or seminal losses, too rapid growth, acute infectious diseases, rapid child-bearing, etc. The back feels weak as if it would give out, and there are burning along the spine, sexual excitement, throbbing headache, and weakness in the epigastrium. There is a morbid impressionability, so that the slightest odors, sounds, etc., aggravate symptoms, and emotional influences produce cardiac palpitation. When sexual exhaustion is present, it will be found that it is accompanied by excessive sexual desire, or has been preceded by this condition.

In hemiplegias, locomotor ataxia, and other organic diseases, it is a remedy, being adapted to the nerve lesions itself as well as to those liable to accompany it, as vascular degeneration, Bright's disease, etc.

In mental troubles it is adapted to general paralysis of the insane and to mania with erotism.

Eye symptoms, as amblyopia, optic nerve atrophy, and night blindness, are indications for Phosphorus.

Physostigma, also known as *Calabar bean*, has a double use in practice, being adapted to the treatment of tetanus and functional diseases of the spinal cord. In the former, it is largely used by allopathic physicians, though in physiological doses. In hysterical spinal affections, it is indicated by numbness of the feet and hands, and crampy pains, rigidity of the muscles of the back, twitching of the muscles of the extremities when dropping off to sleep, and localized sensitiveness of the back.

Platina is of use mainly in hysterical and ovarian diseases. It is indicated by anxiety and apprehensiveness. The digestive tract shows abnormalities in the shape of flatulence and constipation. In hysteria and melancholia associated with uterine and ovarian disorders, it is one of our main remedies, corresponding closely to the action of Aurum on the male genital organs. There is almost always increased sexual excitement, amounting in some cases to nymphomania.

In paralyzes, it is indicated when they are associated with localized anæsthesias.

It is useful in neuralgia, when associated with the numbness just referred to, and when the pains are of a crampy character. The pains increase and decrease gradually. It is one of our most important remedies for the nervous affections following unnatural sexual vices.

Rhus toxicodendron is indicated in quite a variety of nervous conditions, most of which, however, are due to the rheumatic diathesis. In paralysis dependent upon neuritis or perineuritis, especially when following exposure to wet or cold, or overwork, it is the remedy to be first thought of. It is also frequently indicated in the paralyzes following apoplectic seizures. The local palsies in which it is most frequently indicated are ptosis, paralysis of the extrinsic muscles of the eyeballs, facial paralysis, and paralysis of the muscles of the larynx. The same indications call for its use in quite a variety of neuralgias and headaches.

It is an important remedy in the vertigo of old people, especially when associated with a sensation as of swashing in the brain,

Zinc is adapted to quite a variety of neuralgias, spinal affections, and degenerations. Its effect on the spinal cord will be fully explained in the section on locomotor ataxia.

Stramonium finds its therapeutic sphere in spasmodic and excited conditions, as chorea, epilepsy, delirium tremens, mania, etc. It is characterized especially in all these cases by the violence of the symptoms.

Surgical Measures in Diseases of the Nervous System.

Recent years have been marked by great advances in the application of surgical principles to diseases of the central and peripheral nervous system. The enthusiasm created by this new field of labor tends without doubt to the adoption of too radical measures, and the doing of considerable damage. But the same is true of all new discoveries. Brain surgery may now be said to have reached the period of its career when a wise conservatism prevails in its practice. The necessity for operative treatment in the majority of cases of fracture of the skull is now pretty generally recognized. In cases of compound depressed fracture, there seems to be no difference of opinion as to the proper course to be pursued. The same is true of simple fracture when attended by evidence of cerebral disturbance. But in the case of simple depressed fractures without marked symptoms authorities are at variance. The opinion is, however, growing that even these cases should be operated. This radical measure has strong reason for its endorsement, as is shown by the many cases of head injury which develop epilepsy, and other serious conditions in after-years. In view of this, and especially when it is well recognized at the present time that secondary operations for the cure of traumatic epilepsy are successful only in a very small percentage of cases, I am certain that the views of those who recommend operation in every case of depressed fracture are entitled to the greatest respect. Whenever there exists a doubt as to the proper course to be pursued, I think that the doubt should be decided in favor of at least an exploratory incision. With very marked cerebral symptoms, even trephining should be performed, of course guided by intelligent surgical and neurological indications.

In cases of injury with laceration of the brain structure, every care must be taken to prevent the formation of cicatricial tissue within the structure of that organ. Such tissue, it is well known, is very apt to cause epilepsy. Even the adhesions between the membranes following an ordinary trephining have produced epilepsy. Ragged pieces of brain must, therefore, be trimmed off, of course using proper judgment. Objections to this procedure have been made because of the danger of thereby damaging cerebral functions. This danger is more apparent than real, for where portions of the cerebral cortex have been excised for therapeutic purposes, the loss of the corresponding function has been but temporary.

It may appear very radical to the uninitiated, but I cannot express myself too strongly concerning the value of exploratory incision as a routine procedure in *all* cases of severe head injury, even though the objective examination shows no sign of fracture. Exploratory incision in head injuries has been a routine treatment for a number of years in the Hahnemann Hospital. As a result, we have come across many cases which would

have died or ended in hopeless invalidism had unwise conservatism been our rule. Failure to follow this practice has at times resulted in the mortification of discovering cranial fractures with menigeal hæmorrhage, either at autopsy or at a time when it had become too late to be of much avail. I certainly can see no objection to the exploratory operation. The worst that can be said of it, is that it makes an alleged unnecessary wound. This is more than counterbalanced by the very many cases in which the incision gives positive findings. Physicians and surgeons inexperienced in accident service have no conception of the frequency with which serious head injuries present few or slight disabling features at the time of their reception into the wards of a hospital. I have even seen a case of extensive depressed fracture, due to a fall from a bicycle, giving no trouble whatever at the time. The young man continued his journey for several days. When he came under my care six months later he had an incurable Jacksonian epilepsy.

Intracranial hæmorrhage is an accident for the benefit of which much has been expected from surgery. The poor prospects of any relief thereby in the case of intracerebral hæmorrhage will be fully appreciated after perusal of the section on "apoplexy." In the case of meningeal hæmorrhage, the prospects of relief from trephining and removal of the clot are, as a rule, excellent, especially if there be no accompanying injury of brain substance. Even when the extravasation in such cases is not sufficient to cause death, operation is wise as a preventive of permanent impairment of cerebral functions; for where so much cortex is affected, as there must be in cerebral hæmorrhage, perfect restoration to health cannot be expected under a too conservative treatment.

Cases of meningeal hæmorrhage may at times be treated successfully many months after the initial injury. This was well illustrated in a case reported by Dr. Van Lennep and myself,* in which the patient complained of severe headaches, and finally lapsed into a state of coma. The trephining disclosed a hæmorrhagic cyst. The cure was permanent.

The treatment of hydrocephalus by operation will be considered in the special article devoted to that subject.

The treatment of idiocy by craniectomy must be regarded as utterly useless. In a number of cases in which I have been associated with my friend Dr. W. B. Van Lennep, the results have not been such as to warrant further resort to such a dangerous operation.

It is true that in some of the cases improvement sufficient to please parents followed the operation. But in all such I have always felt that the operation encouraged parents to institute educational measures, which, we must admit, constitute the most important factors in the treatment of imbeciles.

* *Hahnemannian Monthly*, 1902, p. 743.

As to the operative treatment of tumors and abscesses of the brain there can be no question. The results are in the main good, when the infancy of the subject is taken into consideration.

The unfortunate side of the question lies in the diagnostic difficulties, and the comparatively few cases in which it is possible to make a permanent cure. Nevertheless, the good results that do ensue should be regarded as highly satisfactory, for we know that all of the cases will certainly result fatally if left to medical treatment, so that the few that are saved may well be regarded as so much clear gain.

Spinal surgery also has a great field in the future. At this time I shall speak only of the operative treatment of traumatic paraplegias. When a spinal cord has been damaged by fracture or dislocation of the vertebra, but little can be expected from operation after the lapse of any great interval of time. Under such circumstances, there usually ensues extensive degeneration of the delicate fibres of the various systems of the cord, and these can never be replaced, no matter how thoroughly pressure and irritation may be removed by trephining. Early operation is indicated; but then we run the risk of shock from the procedure, the shock being all the more serious by reason of its taking place so shortly after the original injury.

One should not be too rash in promising results in the acute cases. It is the rule to find, after exposing the injured cord, that its fibres have been seriously crushed, thus making repair out of the question. In still other cases we find that the pressure of the displaced or fractured vertebra continues for but a few seconds or minutes, for when the parts are exposed no pressure is found to exist. As to spinal meningeal hæmorrhage, there is no doubt whatever as to the necessity for prompt interference.

Nerve resection and nerve stretching have indications in the treatment of neuralgias. The latter is, as a rule, of doubtful utility, and is to be regarded as a means to be adopted in selected cases. For further information concerning both operations, the reader is referred to the sections devoted to the consideration of the special forms of neuralgia.

A very interesting class of operations on the peripheral nervous system is found in nerve grafting and nerve anastomosis, as so enthusiastically favored by Ballance. By this operation it is possible to so far relieve local palsies as to render an otherwise miserable existence quite tolerable. Such operations, however, should not be undertaken by any but an unusually experienced surgeon, who has his anatomical data well in mind. The decision as to the nature of the operation required must rest with the neurologist, who in turn will require many hours of patient study before he can decide as to the necessities of individual cases.

Surgical operations performed for the cure of reflex conditions are, as a rule, to be condemned unless the condition of the part operated upon is

such as to indicate the procedure regardless of the existence of the associated nervous condition. We hear much of this and that trouble cured rapidly by this or that operation, and yet we find that such cases but rarely occur in the experience of advanced students of medicine. The relation of status of reflexes in the etiology and treatment of disease is best stated in the language of Mitchell: "The strange causes, the reflex visceral parent-ages, the lucky decayed tooth, etc., are, alas, too rare, but serve to keep us watchful and to make the text-books less dull reading by introducing the pleasant unexpectedness of romance." An experience by no means small leads me to say that the reflex cases are few in number, and that the wild resort to operations in this or that special field is productive of negative, if not indeed harmful, results.

Pain.

This article will have to do only with the alleviation of pain as a symptom. Its cure must depend upon the recognition of its cause and the removal of the same. The reader will find the latter subject fully covered in the sections devoted to the treatment of the many painful affections.

In studying pain, one has not only to do with the pain itself but with the person who suffers it. Some persons are able to tolerate pains of a most excruciating character with but little outward evidence of suffering, while others exhibit the greatest demonstration from the slightest aching. Again, we find persons on whom severe pain exerts very little constitutional effect; while at the other extreme there are individuals, mostly neurotic subjects, who are pulled down by very slight suffering. These facts must be borne in mind before one makes special attempts at the administration of remedies for palliating pain.

First, we will consider the non-medicinal measures for relieving pain. Of these, none are of any greater importance than the personality of the physician. If the patient has confidence in him, and his manners in the sick-room give assurance of a hopeful outlook, suffering will lessen and finally disappear under the beneficent influence of mental impression alone. This remark applies to cases in which the natural tendency of the disease is to recovery, and not to the incurable pains of cancer or the obstinate pains of organic disease, as of renal colic.

Hygienic measures should be used alone unless the pains are exhausting and severe. Pain should be regarded as nature's warning. It teaches the patient that he must take care of himself, and it disappears with its primary cause. Of the general measures in common use, the most important are rest and applications of heat and cold. Rest is nature's great remedy. This it secures by the increase in the intensity of the pain on any motion, and by rigidity of muscles tributary to the painful part, making movement difficult or even impossible. We may give as illustrations the

rigidity of muscles moving the inflamed joints, and of the abdominal muscles in cases of gall-stone colic and appendicitis. To assist nature we may reinforce the rest by putting the affected part in splints, as when we strap the chest in the early stage of pleurisy. In case of pain involving the internal viscera, we may enforce additional rest by limiting the function of the diseased organ. Thus, in gastric ulcer and acute gastritis, we give no food whatever. This treatment proves curative as well as palliative.

The application of heat constitutes a most valuable method of alleviating suffering. In the case of abdominal disease, we make use of hot-water bags and poultices. The former are decidedly preferable, as being equally as efficient and more cleanly than the latter. The hot-water bottles should always be wrapped in flannel before applying them, as we then run less danger of burning the patient. The nurse or attendant should always test the heat of the bottle on her hand before using them on the patient. They should always be made as hot as the patient can *comfortably* stand.

In the case of joint pains, we secure the effects of moderate heat by wrapping the affected parts in layers of flannel. We may, however, use the hot-water bags here.

When hot poultices are prescribed for the relief of pain, it is important that they be made hot and wrapped in flannel. Disregard of these instructions leads to the application of a cold clammy mass to the patient's skin or to burning of the parts.

In the case of pain dependent upon active inflammation, as in traumatic arthritis, we find application of cold better in many instances than heat. Then we make use of ice-bags. Cloths wrung out in iced water are unsatisfactory, as they wet the clothing and require frequent changing.

In the case of most of the painful affections, but little treatment is required aside from that necessary for the cure of the original disease. This remark applies to the pains of influenza, typhoid fever, gout, and rheumatic fever.

When pain is dependent upon retention of secretions, as in catarrhs of the accessory nasal sinuses and otitis media, and abscesses in any portion of the body, the only rational treatment is free drainage. It is true that we may temporize by using analgesics until such time as nature comes to our aid; but such a course is bad practice, for it encourages patients to wait beyond the limits of safety.

In certain serious conditions, pain is of distinct value to us as indicating the progress of the patient's complaint. To stifle it by analgesics blinds us. This remark is especially appropriate to appendicitis.

Of the analgesics, Morphia is unquestionably the most certain and most satisfactory in its action, especially when given hypodermatically in combination with a small quantity of Atropia. It is very rarely, however, that it can be administered satisfactorily in neuralgic pains, because of the

great liability to contract the Morphia habit, if it should prove necessary to keep up the administration of the drug for any great length of time. While from one-eighth to one-quarter of a grain is the dose required to begin with, it will not be many days before one-half or even a whole grain is required to give the necessary relief. In incurable cases, in neuralgic pains dependent upon hopeless inflammatory or malignant changes, there is no remedy to replace Morphia. One might as well reconcile himself to the inevitable in the beginning, and give the patient all of the little comfort that remains for him in his remaining days of life. In malignant disease of the vertebra, in sciatica dependent upon malignant disease or extensive intra-pelvic suppuration, Morphia becomes absolutely indispensable. It is practically the only analgesic in pains originating in organic disease outside of the nervous system, as cholelithiasis, nephrolithiasis, cancer of the stomach, painful phlegmons, etc. It is true that Codeia is often suggested as a substitute, but without any advantage. It is not as efficient as Morphia, and is nearly as dangerous in the production of the drug habit. While thus an ardent advocate of Morphia, I must say also that I seldom use it, so far as the number of patients in whom I find it suitable is concerned. But when using it, I do so freely according to the indications given by the patient's sufferings.

Far more applicable, that is, indicated in a far greater number of cases, are the coal-tar derivatives, Antipyrin, Acetanilid, and Phenacetin. Exalgin has also been highly praised, but I have not used it. Its dose is from one to three grains, and it is said to be very efficient as an analgesic. All of the above-mentioned remedies appear to have about the same sphere of action, although it has seemed to me that for general pains Antipyrin and Acetanilid are far more efficient than Phenacetin, which seems to be especially adapted to those about the head and face. While these remedies are invaluable, they must not be administered indiscriminately. The initial dose in no instance should be greater than five grains. If this produces no deleterious effects, it may be repeated. I have never given more than ten grains at one dose, and have never repeated that dose oftener than twice. It will be rare indeed that one has to give a second dose after the first one of ten grains. In every case, it is advisable to study the physiological action of these drugs; to watch the results of their administration in the sick with proper care; and to avoid giving them to patients who give evidence of cardiac weakness.

One great danger arises from the use of analgesics, hypnotics, and other palliative remedies. They so disguise or obscure symptoms that the patient is tempted to disregard nature's remedies, rest, etc., and the physician is unable to observe the progress of the disease correctly.

As to the abuse showered upon the coal-tar derivatives, I believe that it is due to their misuse and not to their proper use. So well known to

the laity is their efficiency in headaches, that many of them have become household remedies. Thus, patients have been dosed to their destruction by overzealous friends and relatives. Most of these drugs are hæmolytic when long continued in extravagant doses. When their administration is under the supervision of a physician they are harmless, when discretion is exercised in studying the patient's susceptibility to their action. Additional particulars as to their indications will be found in other portions of this work.

I shall say nothing concerning the curative remedies in painful affections, as they will find mention in other sections.

CHAPTER XXI.

DISEASES OF THE BRAIN.

Cerebral Hyperæmia.

CONCERNING the existence of cerebral hyperæmia, both as an actual clinical entity and as an accompaniment of other morbid conditions, the greatest differences of opinion prevail. One author requires page after page to describe the symptoms significant of the condition and the post-mortem appearances in fatal cases; while another contents himself in using up the entire space devoted to cerebral hyperæmia to endeavoring to prove its non-existence. As usual when two such extreme views exist, the truth is probably to be found between them. A therapeutic text-book is not the proper medium to advance the arguments bearing *pro* and *con* on this question. Let it be sufficient to state that there are unquestionably cases of cerebral hyperæmia, both primary and secondary; and also that this condition is diagnosed altogether more frequently than attention to scientific accuracy should permit. Many of the cases thus designated are undoubtedly instances of hypochondriasis or neurasthenia or one of the numerous organic cerebral affections.

An appreciation of the etiology of the disease is necessary to its successful treatment. Thus, certain individuals are very excitable by temperament under unusual mental exertion, and cerebral hyperæmia results. It is natural to believe that the persistence of such external agencies to an unnatural extent should transfer a normal temporary change into a permanent pathological one. The necessity of advising these patients to lead a quiet, uneventful life is obvious. In many instances this cannot be done unless the patient leaves business and goes on a prolonged vacation.

When the hyperæmia is dependent upon cardiac overaction, as from palpitation and hypertrophy of the heart, it is necessary to direct our therapeutics to the latter organ.

External cold by exciting contraction of the cutaneous vessels may produce cerebral congestion. Certain poisons, notably Alcohol, Nitrite of Amyl, Nitroglycerin, etc., may be a cause. It is also believed to occur as one of the conditions present in sunstroke. Suppression of menstruation may produce it; and there is strong evidence to show that it is not infrequently the cause of much of the suffering incident to the climacteric.

Passive congestion of the brain is always the result of mechanical causes. Anything which impairs the return flow of blood from that organ

may produce it. Thus, cardiac diseases which cause an overfilling of the venous system, violent attacks of coughing, great muscular effort with closed glottis, playing of wind instruments, tumors obstructing the venous flow from the head, are all to be considered in this connection.

All cases then call for a careful study and removal of the cause. Without this, success is impossible. A quiet mode of living, both physical and mental rest, and a moderate nutritious diet form the most important elements in the general management of the patient.

Remedies must be selected not only by the symptoms of hyperæmia, but also, and this is of greater importance, by the primary condition. This opens up a wide therapeutic field which the limits of the present article will not permit me to review.

Aconite is called for in active congestion resulting from cold, violent emotions or excited action of the heart. The arterial tension is high; the general surface of the body is cold.

Ever since homœopathy became a system of medicine, *Belladonna* has been a popular remedy in cerebral congestion, especially when headache is a prominent symptom. The latter is of a throbbing character, is aggravated by the recumbent posture, and is associated with marked throbbing of the arteries of the head and neck. There is great feeling of heat about the head, while the extremities are cold. Either drowsiness or sleeplessness may be associated symptoms, or these conditions may even alternate. Hughes praises this remedy as the best for the cerebral congestion of childhood.

Glonoïn is called for in cases arising from sunstroke and menstrual suppression. The attack is sudden and of the active variety. There is throbbing pain in any or every part of the head. The face is deep red.

With *Aurum* the cerebral hyperæmia is intensified, if not actually caused by cardiac hypertrophy. There is a sensation as of rush of blood to the head, aggravated by mental exertion. There are also feeling of fullness in the head, tinnitus aurium, sore and bruised sensation in the head, sparks or flashes of light before the eyes.

Veratrum viride is indicated in febrile conditions in which cerebral hyperæmia is a prominent feature.

Gelsemium and *Ferrum phos.* are indicated in passive congestions.

Nux vomica is indicated rather by the associated conditions and causes. It is called for in persons of sedentary habit and addicted to use of alcohol and animal food in excess.

Sulphur is indicated in cerebral congestion when attended by tinnitus aurium and redness of the face, the latter symptom being aggravated in the open air and better in the warm room.

Electricity will prove an invaluable adjuvant in chronic cases. The galvanic current should be passed from the forehead to the back of the head, applying the positive electrode in the former situation. Rumpf has

recommended the application of the faradic brush to the head. This influences the intra-cranial circulation favorably by reflex action from the skin.

Cerebral Anæmia.

Cerebral anæmia is for all practical purposes to be regarded as a secondary condition. It constitutes one of the phases of the blood diseases, as chlorosis, pernicious anæmia, leukæmia, secondary anæmia, etc., and accounts for many of the clinical phenomena present in these maladies. Under such circumstances, the case is to be treated according to the underlying pathological condition, as nothing can be done for the cerebral anæmia *per se*.

Some cases originate in weakened cardiac action, by reason of which an insufficient quantity of blood reaches the brain. Here the treatment should be directed to the heart. The attacks of syncope which constitute one of the prominent features of these cases are to be met by placing the patient in a recumbent position with the head low. Cold water should be dashed on the face, and friction of the surface of the body practiced.

In those cases in which the condition is dependent upon an obstruction to the passage of the blood headward by an intrathoracic tumor, there is very little that can be done in the way of treatment, as the trouble is purely mechanical and surgery is usually powerless.

When hæmorrhage has been the cause of the cerebral anæmia, infusion of salt solution or auto-transfusion performed by elevating both lower extremities or, in dire necessity, driving the blood from the arms and legs by compression with an Esmarch or ordinary roller bandage, becomes a positive necessity.

In all cases absolute rest in bed must be enforced. The fewer changes in posture the patient makes the better it will be for him. The diet must be of the most nourishing character possible, and likewise readily digestible.

Internal medication is largely influenced by the primary disorder. Remedies like *Ferrum*, *Arsenic*, *Phosphorus*, *Nux vomica*, and *Strychnia*, will be most frequently available.

Meningitis.

Pathologically, we recognize a number of varieties of cerebral meningitis, the classifications being based upon the particular portions of the cerebral membranes involved, or upon the etiological or infecting agent. Clinically, we are not always able to recognize these types; hence, it can hardly be said that special rules can be laid down for the treatment of each. Nevertheless, we are able to do considerable for all of them, although the prognosis as a general rule is grave. We are obliged to rely very largely upon symptomatic and etiological indications as our guides. Especially

does this uncertainty apply to the varieties of pachymeningitis or inflammation of the dura mater.

Cerebral Pachymeningitis.

Again we may make a subdivision of pachymeningitis into the external and internal varieties. Such differentiation is not necessary during life. The external pachymeningitis is the less uncommon of the two. Being always secondary to disease or injury of the cranial bones, its treatment is surgical. When consequent upon caries of the cranial bones, it is dependent upon ozæna, chronic middle ear suppuration, or mastoid disease. Occasionally it is an accompaniment of syphilitic disease of the cranium; but such cases are not always amenable to anti-syphilitic treatment, because the meningeal inflammation is a non-specific lesion, originating in the inflammation or destruction of the overlying bony structures.

The history of a head injury and the prompt supervision of intracranial symptoms makes trephining imperative, and that too whether the fracture be a depressed one or not. There should be no delay in urging the importance of the operation. Even in syphilitic cases, surgical interference is justifiable when the situation of the lesion can be determined.

Pachymeningitis Hæmorrhagica.

The treatment of this disease is nullified by the fact that it is a frequent accompaniment of serious or incurable diseases, which of themselves preclude the possibility of recovery if radical measures are instituted. Thus, it is one of the complicating lesions in general paralysis of the insane and chronic alcoholism; less frequently does it occur in association with other varieties of insanity.

The treatment must be conducted entirely on theoretical considerations. Symptomatic treatment will be the only plan available in most instances. Occasionally we have clearly-defined localizing symptoms which suggest exploratory trephining, and this has led to successful removal of the lesion. The hypothetical hæmorrhagic origin of the trouble calls for measures directed to the control of intracranial hæmorrhage, as elevation of the head and shoulders, rest, and application of cold to the head. The inflammatory theory suggests the administration of such remedies as *Belladonna*, *Rhus*, and *Bryonia*.

Tubercular Meningitis.

The prophylaxis to be instituted in the case of children who by reason of exposure to tuberculous infection may develop meningitis is that of tuberculosis in general, namely, an abundance of pure, fresh air. The little one's physical growth should be favored. Little or no thought should be had for the present as to the development of its mental powers.

With the appearance of symptoms suggestive of the diagnosis of tuberculous meningitis, we should not abandon all hope, for there can be no doubt that many cases have been cured, though these are in a decided minority. We should bear this in mind, lest the unfavorable outlook should prevent a healthy enthusiasm in enforcing our efforts for the recovery of the patient.

Cold to the head is a useful measure in the acute cases. It is not so much the influence of the cold *per se* that is needed as the reflex influence of its application. For this reason, cold water, and not ice, is better. It is a good rule to shave the head in adult patients; with children the close cropping of the hair will be sufficient. Absolute rest is necessary. Rest the patient completely, both body and mind. Darken the room; keep out the noise; disturb him as little as possible by officious attention. The diet must be adapted to sustaining strength, and must be at the same time digestible. Well-made beef broths and milk fill every indication for food.

When the condition has advanced to a stage at which it is no longer possible for the patient to swallow food, nutrition must be enforced by the rectum. In some cases we may find it necessary to feed through the nasal tube.

Special attention must be paid to the regular emptying of the bladder. If there is retention of urine, the catheter must be used under strict anti-septic precautions.

Counter-irritation is useless, and only adds to the patient's suffering.

The resort to operative treatment is well worth consideration. There is at present no precedent for its application. We do know, however, that tubercular disease of the peritoneum has been cured by abdominal section. Analogy would lead us to expect at least a favorable result by opening the meningeal cavity. This recommendation is based largely on theoretical considerations. In putting it into practice the physician should be guided entirely by his own feelings as to what he would do under the circumstances were the patient of his own family.

Other operative procedures include tapping of the ventricles and lumbar punctures. The latter is said to offer considerable hope; but the reports in medical literature are very imperfectly presented, and are few in number.

Among the remedies, *Iodoform* stands at the head. This drug has in several instances (I have twice observed it do so) produced symptoms indistinguishable from meningitis. It is customary with old-school physicians to shave the scalp and apply an iodoform ointment for two or three days. The internal administration of the drug will probably do as much, if not more, good. I have used it in the second decimal trituration, giving one tablet of the same every two hours.

Apis is another remedy whose symptomatology bears a close resemblance to tubercular meningitis. It exhibits the fidgety restlessness of the beginning of the disease, the loud hydrocephalic cry. The child bores its head into the pillow, rolling from side to side. Convulsions may be present, or the child may be convulsed on one side and paralyzed on the other. Eye symptoms in the shape of strabismus appear. Spasm of individual muscles, especially of the flexors, may be present. The symptoms of this drug are marked, therefore, by irritability.

Helleborus, on the other hand, is adapted to cases in which apathy is the prominent feature. The onset of exudation does not contra-indicate it. There are shooting pains in the head; the child bores its head backward into the pillow; the head is hot; the forehead wrinkled; automatic motions of one arm and one leg; eyeballs drawn upward; face flushes up suddenly and gradually pales; pupils do not react to light; corrugation of the muscles of the forehead, with more or less constant chewing motion of the mouth.

Iodine has been lauded by Jousset, and has pathological considerations in its favor.

Sulphur is indicated mainly by reason of its adaptability to constitutional dyscrasie.

Hughes recommends *Belladonna*, *Bryonia*, *Helleborus*, and *Sulphur*, placing his main reliance, however, on the former two. *Belladonna*, he says, continues to be the proper remedy as long as effusion keeps off, when *Bryonia* should be substituted. Farrington observes very properly that this remedy bears only a superficial resemblance to tubercular meningitis. Its genius adapts it to sthenic conditions, which do not characterize the disease under consideration.

The recommendation of *Apocynum* for the effusion is without good reason, pathological or otherwise. Such remedies as *Digitalis* (Baehr), *Bryonia*, and *Apis*, will give better results.

Calcarea ostrearum and *phosphorica* are remedies indicated like *Sulphur* because of their constitutional states rather than by their symptoms, and they should prove of service in some cases. They are highly praised by Jahr. A strumous child of four years, parents phthisical, was the second child of the family to be attacked with tubercular meningitis, an older sister having died of that disease two years previously. The onset followed a rather protracted prodromic period. The disease reached the stage of effusion, and presented symptoms of convulsions with paralysis of the right side as well as of the ocular muscles. The hydrocephalic cry was well marked, the abdominal walls retracted, and the bowels constipated. *Lycopodium* 6x, prescribed upon a number of its well-known symptoms, was followed by gradual relief of the symptoms. The patient made a tedious recovery. I have several times given this medicine with good re-

sults to strumous children who seemed to be developing symptoms suggestive of tubercular meningitis.

Should our efforts be crowned with success, it is of special importance that we insist upon a most rigid care of the patient during convalescence. Under no circumstance should the patient be permitted to expose himself to the danger of mental and physical labor until it is known that his condition has attained the maximum of improvement. Even then, it is necessary to warn him to take care of himself whenever occupation or pleasure causes a return of symptoms or the appearance of cerebral discomfort. Dealing with peculiar temperaments, as we do at times, we may deem it necessary to go counter to our best judgment and permit liberties to prevent patients from becoming morbid on the one hand, or restless and worrying on the other.

Simple and Suppurative Meningitis.

Prophylaxis is the important treatment of serous or septic meningitis. To this end, we must bear in mind its etiology, including septic infection of scalp wounds, fractures of the cranial bones, suppurative disease of the middle ear, erysipelas, phlegmons, and certain of the acute infections, as pneumonic fever, typhoid fever, etc.

Prophylaxis as related to head injuries is the most neglected. *It should be a settled rule in the practice of all physicians to invariably enforce the most rigid antiseptic treatment in even the slightest wounds about the head. In all severe ones, he should make an exploratory incision. When fracture is known to exist, it should be trephined. There may be no depression, but there may be clot to do subsequent damage. Trephine early.*

The prophylaxis as related to secondary infections from the acute diseases relates mainly to the institution of treatment which shall cause the disease to run a mild course, and to hasten recovery. A proper supervision of the convalescent stages of these diseases will also do much to prevent sequelæ. The general treatment of simple or suppurative meningitis does not differ in particular from that outlined for the tubercular variety. It is well to shave the head. Douches of cold water are of some value in the comatose stage. Lumps of ice should be administered to allay vomiting.

If the fever is a serious factor in the case, we have two hydiatric measures at our disposal, namely, the full bath at 80° F. or the prolonged warm bath. In adult patients, the difficulties attendant upon the immersion are such as to force us to rely entirely upon sponging or the cold mitten rub. Antipyretics do not seem to be of much value, unless at the same time they relieve the headache. For this purpose, Antipyrin is probably the best.

But when the head pains are severe, there is no remedy like Morphia.

Barr, of Liverpool, reported a series of cases of meningitis in which he obtained most wonderful results from the routine administration of Opium. Previous to this, it had been the contention that the cerebral hyperæmia induced by Opium must have a harmful influence over intracranial inflammation. Barr's idea seems to be the keeping of the patient under the constant physiological action of the Opium, so as to secure absolute brain rest. His plan seems feasible, and is worthy of additional trial.

The nurses and attendants must watch the patient carefully lest bed-sores develop.

Alcoholic serous meningitis demands special measures, as it is characterized by serous effusion and pronounced asthenia. The diet should then be as liberal and as nutritious as possible. At first it must be liquid. If stimulation is required, alcohol should not be prescribed under any circumstances. *Caffein*, *Strophanthus*, and *Strychnia* will be found to be the best stimulants.

Surgery offers but little hope in the cases depending upon middle ear disease. An infection starting in the convexity in these cases spreads with such alarming rapidity to the base that no operative procedure is capable of eradicating the etiological factor. Still, operation must not be resorted to until the indications for it are plain and it is reasonably certain that the patient cannot recover under careful nursing and medical treatment.

In ear troubles it is probably best to direct all surgical interference to the ear directly. As promptly as possible, the mastoid and antrum must be opened, cleared of all septic matter, and thorough drainage effected. Trephining, excepting as it furthers these ends, is unwise.

In traumatic cases, I believe it to be good practice to trephine, providing the situation of the injury or the symptoms offer us a guide to intelligent action. Moribund cases are better let alone whatever their causes.

Lumbar puncture is referred to with favor by neurologists generally. Starr speaks of cases in which from 50 to 100 cc. have been withdrawn from the central canal for several days in succession.

In cases arising from traumatism, *Arnica* is the remedy *par excellence* unless there are clear indications for others. It should be given as a prophylactic from the very beginning of accidents liable to produce meningeal inflammation, as there is considerable evidence of its value. In the convalescent stage of the disease, when mental dulness or apathy is present, it should also be administered.

Aconite is adapted to the early stages of the disease, that is, on the first appearance of inflammatory symptoms. Especially is it called for in cases arising from exposure to the sun.

Belladonna is the remedy in cases presenting violent symptoms. The delirium and headache are intense. The face is greatly congested. The patient's manner is quick and hasty. When symptoms of stupor, paralysis, etc., appear, it is no longer indicated.

Then *Bryonia* in particular is to be thought of, as probably the stage of effusion has been reached. Jahr praised this remedy, saying that it is indicated when the delirium is of a mild type, and the pains in the head are of a severe shooting, tearing character. The face is congested a dark red. There are sensorial depression, constant chewing motion of the mouth, shooting pains worse from any motion. Fever may or may not be high.

When the convulsive phenomena are prominent, then *Cuprum* should be given. The face is pale and the lips blue; delirium is marked; and there are violent movements of the eyeballs.

Lachnanthes is useful for the rigidity of the neck.

In syphilitic cases no remedy is equal to *Mercury* or *Potassium iodide*. The latter is called for in the chronic cases especially. I have seen a most remarkable recovery occur in a case of meningitis, following about one year after infection, under the influence of mercurial inunction after Mercury by the mouth and Iodide of potassium had signally failed.

Starr* is very positive in recommending a course of mercurial inunction to be carried out for one week before resorting to the Potassium iodide, and this irrespective of the stage of syphilis at which the meningitis appears.

Veratrum viride has been suggested by Hale as a valuable remedy to alternate with Belladonna in all cases in which that remedy is indicated.

Other remedies to be studied as applicable to meningitis are *Glonoin*, *Digitalis*, *Helleborus*, *Gelsemium*, *Solanum nigrum*, *Enanthe crocata* and *Zincum*.

Intracranial Hæmorrhage.

The treatment of intracranial hæmorrhage must vary according to the location of the bleeding, *i. e.*, as to whether it is within the brain substance itself or is limited to the extra- or sub-dural space. The former is practically always medical; the latter invariably surgical. The present subject will, therefore, be considered under two headings.

1. **Intracerebral Hæmorrhage.**—The clinical manifestations of cerebral hæmorrhage and cerebral thrombosis are remarkable for their similarity; and yet careful search will, in the majority of cases, enable the practitioner to make a differentiation. Such differentiation is of the highest importance, for the measures which are adapted to the one are distinctly harmful in the other.

Preventive measures do not offer much in the way of a successful therapy. The lesion finds its origin in a vascular degeneration, and this can only be retarded in its onward progress by careful attention to all hygienic measures and internal medication directed to current conditions. Unfortunately, the first recognition of vascular degeneration rarely comes before

* *Organic Nervous Diseases*, p. 727.

the accident has happened. Should, however, the existence of arteriosclerosis in association with cardiac hypertrophy or kidney disease be discovered, the patient should be treated as outlined in the sections devoted to the consideration of those maladies.

The first indication in the treatment is the limitation of hæmorrhage. There is a false impression abroad that the damage done by an hæmorrhagic extravasation is instantaneous. This is a mistake, for after the rupture of the vessel the oozing of blood continues, and the symptoms increase in intensity for an hour or more. Inasmuch as surgery is not admissible, owing to the important structures surrounding the lesion, one's efforts must be directed solely to the reduction of the general and local blood-pressure and the promotion of blood-clotting, at the same time avoiding meddlesome measures which can do nothing but harm.

The first indication for treatment is absolute rest, and by absolute rest I mean rest in every particular. The importance of this point cannot be over-estimated. Very often patients are encouraged by their friends to keep moving in order to throw the symptoms off. This is most pernicious advice. So complete should be the rest that efforts to arouse the patient by calling to him should be desisted from. Passive movements of the body must be positively forbidden, excepting as found necessary to give the patient proper attention.

The patient's posture is important. The head should be high. If stertor is present, the patient should be placed upon his paralyzed side. Lying on the side stops the stertorous breathing, which is not only distressing to his friends, but also increases the arterial tension. It is important to have the paralyzed side undermost, because the movements of the healthy side are then free. There is also the theoretical advantage of having the affected side of the brain uppermost, and thus away from the influence of gravity in perpetuating the hæmorrhage.

The clothing must be loosened, and the head so placed as to avoid flexion of the neck, thus doing away with all obstruction to the return flow of blood from the brain.

In putting the patient to bed, every possible care as to the above details must be followed. If there is the slightest difficulty in undressing him, there should be no hesitation whatever as to ripping open the seams of his clothing. Seams and fabric are more easily repaired than brain fibres.

When collapse is not present, the application of ice to the head has a very beneficial effect, as it serves by reflex influence to excite contraction of the cerebral bloodvessels. In the face of collapse, mustard plasters to the nape of the neck have been recommended by Gowers as of value in inducing reflex contraction of the arteries. It is well, likewise, to wrap the legs in hot mustard water—a cupful of mustard to a pail of water; or hot bottles may be applied to the trunk and extremities. These hot applica-

tions act by dilatation of the peripheral bloodvessels, and should therefore lessen the intracranial blood pressure.

The lancet as a means of reducing arterial tension has been very properly abandoned by all intelligent physicians in the treatment of intracranial hæmorrhage. We may, however, employ the device first suggested by Dawbarn, of New York, to "bleed the patient into his veins," so to speak. As soon as possible after the onset of the attack, the physician should cut off the return circulation from the lower extremities. This is done by the application of the Esmarch bandage, a tourniquet, or a Spanish windlass, to one or more of the extremities as near the trunk as possible. The apparatus should be made sufficiently tight to obstruct the return flow through the veins pretty thoroughly, but not so great as to interfere with the arterial flow. Experimental evidence shows pretty clearly that this procedure lowers vascular pressure, and favors the cessation of internal hæmorrhage. The pressure should be maintained for about an hour. Then the blood should be permitted to return to the general circulation very slowly. The only objection to Dawbarn's suggestion is that of possible danger in the hands of those who are unskilled and who lack judgment. Persons of that kind should never undertake the treatment of a human being, no matter how mild his ills; consequently, the objection fails to have weight.

Active purging is capable of reducing blood-pressure; hence, it may be well sometimes to avail ourselves of this remedy. To secure a result, one or two drops of Croton oil should be placed upon the tongue.

When the extremities are cold, hot-water bottles should be used. They must be employed with the greatest care, however. Owing to the patient's helpless condition, the liability to produce pains is great, and a burn in a hemiplegic patient is a serious matter, for local nutrition is poor and the danger of sloughing correspondingly great.

In all cases, stimulation by alcohol and cardiac tonics is bad practice.

In cases in which there is evidence that the hæmorrhage is from the lenticulo-striate artery, compression of the carotid artery maintained for thirty to forty minutes will, by diminishing the local blood-pressure, favor clotting. Horsley has recommended that we go even farther than this, and ligate the common carotid artery on the side of the lesion as a means of stopping the hæmorrhage. There can be no doubt, if we are to judge from experimental evidence, of the efficacy of this procedure. Indeed, a successful case has been reported by Dercum and Keen;* but the operation is of such a severe character and requires so many precautions to render it safe, that by the time it has been performed the hæmorrhage has ceased spontaneously.

* *Journal of Nervous and Mental Disease*, vol. xix, p. 586.

There are cases, many of them in fact, in which all our best directed efforts at relief fail, and deep and long-lasting coma supervenes. These must be treated on general principles. The bedding requires the most careful attention owing to the danger of formation of bed-sores; in extreme cases the water-bed is desirable. Extreme cleanliness must be enjoined.

The diet must be the lightest possible. Liquid foods, as milk and broths, should be the sole articles permitted during the acute stage. Many cases of intracranial hæmorrhage succumb to pneumonia. For many years, this intercurrent affection was regarded as a trophic condition, for the prevention of which little or nothing can be done. It has now been pretty certainly decided that such pneumonias are of the deglutition or aspiration variety, and that they are brought about by the escape of particles of food and drink into the respiratory tract. This knowledge shows us the importance of great care in the administration of food. Indeed, it is better to let the patient go unfed for a few days rather than to expose him to this serious danger. Should the patient show a disposition to retain food in the mouth the nurse must make it a routine practice to inspect that cavity after every feeding, remove all particles of food, and finally rinse the parts with a mild antiseptic mouth-wash.

Should there be a very high temperature (105° F. or thereabouts) I should certainly have recourse to the cold-pack. I have used it in other brain affections than hæmorrhage with good effects, though not in the affection under consideration.

Retention of urine calls for catheterization; especially is this an important measure when retention of urine is followed by dribbling. It is evident then that we are dealing with a distended bladder.

As to medicines, if in the beginning there is an excited condition of the circulation, *Aconite* should be administered. It will almost certainly have a beneficial effect.

If the cerebral congestion be a prominent symptom, *Belladonna* should be thought of, especially with the characteristic circulatory disturbances of that remedy, bright red suffused face, and full bounding pulse.

Glonoïn I would advise in cases in which the arterial tension is high and there is co-existing kidney disease. One drop of the first centesimal dilution should be given three times daily. As the administration of the drug is continued, it may be given at shorter intervals until the patient is taking it every two hours.

Opium should be administered in cases characterized by marked venous congestion. The profoundness of the stupor is not an indication for the drug, because that symptom is dependent upon the severity of the hæmorrhage, and therefore upon mechanical causes only. For this, *Opium*, or in fact any other drug, is powerless.

Arnica is the drug that should be administered after the acute symptoms have subsided to promote the absorption of blood.

For the subsequent paralysis, *Causticum* has done more good in my hands than any other remedy. It is, of course, impossible to say how much of the improvement in these cases is due to the drug, and how much to time, which is certainly an essential element in their cure and improvement.

Sulphur and *Baryta carb.*, the latter especially in old people, have likewise been recommended as remedies that will promote the absorption of the clot.

Attention to the kidneys is always an important matter. Whenever there is albuminuria or deficiency of excretion, free drinking of a pure water is to be advised.

Electricity is often proposed by the patient's friends and relatives in post-apoplectic paralysis. There is great danger that the pressure thus brought to bear may lead to its use either too early in the case or in entirely unsuitable cases. For the first month, I would advise that the patient be permitted to enjoy rest without electrical interference. At the end of that time, the application of galvanism to the head may prove useful by promoting absorption of the clot. Galvanization of the contracted muscles and faradism of their opponents have been recommended when the stage of late rigidity has appeared. When the affected parts are limp, simple faradization of the paralyzed muscles serves to exercise them and maintain better nutrition, so that when nature has healed the central nervous system the patient is in better condition than he otherwise would be.

Something can be done in the late stages of post-apoplectic paralyses by properly directed gymnastics of the paralyzed parts. The aim should be to call the healthy side of the brain into play to help the injured one. This may be done by directing similar movements to be performed by both sides of the body simultaneously. It is astonishing how much better are the movements of the paralyzed extremity when thus performed than when attempts are made to make the paralyzed limb move by itself. This idea has now been sufficiently well worked out to lead me to recommend it highly. It is unfortunate that physicians do not take the time and trouble to put it into practice with their paralytic patients.

Cerebral Embolism and Thrombosis.

Three lesions are capable of producing the apoplectic state with its sequential hemiplegia and other evidence of damage to brain structures. These are cerebral hæmorrhage and embolism and thrombosis. In the management of the acute stages of these conditions it is readily understood that a correct diagnosis must be made, for the treatment which is appropriate to one is usually admissible or even harmful in the others. In the absence of data making the diagnosis positive or fairly so, it is better to act tentatively rather than to apply measures which will do harm if misapplied.

Authors have spoken of the prophylactic treatment of embolism and

thrombosis. This would be all right if we could possibly know the cases in which these accidents are about to take place. Not possessing such knowledge, it remains for us to treat the various conditions which are liable to be succeeded by embolism and thrombosis according to common sense principles, without frightening the patient and family with dire possibilities of paralysis, etc. Embolism is practically always secondary to endocarditis, and especially to stenosis of the mitral orifice. It is a very common incident in the course of malignant endocarditis. Of course, patients with mitral stenosis and chronic endocarditis cannot spend their whole lives in fear of cerebral embolism; but certain precautions should be observed during the acute stage of the endocardial inflammation, and for some little time after it has subsided. Such precautions, fortunately, are only those we would advise for the mitigation of the damage done to the cardiac valves, and really do not apply particularly to the prevention of embolism. They include rest of mind and body; especially should sudden movements or violent emotions be avoided, because of their liability to detach any vegetations and carry them into the cerebral bloodvessels.

Thrombosis of the cerebral arteries is due primarily to syphilitic endarteritis or to one of the various types of arterio-sclerosis. The prophylactic treatment then becomes obvious, but it should be adopted irrespective of any fear of cerebral thrombosis. The syphilitic patient should be carefully watched and treated; and patients with arterio-sclerosis should be compelled to follow the principles laid down in the section devoted to the treatment of that condition.

With the development of the apoplectic state, the treatment must be conducted mainly according to symptomatic indications. The administration of cardiac stimulants in embolism has been considered indicated from a theoretical standpoint by old-school clinicians, but accomplish nothing. Very often we find the heart action excited and labored, in which case *Aconite* or *Veratrum viride* is suggested. The application of ice to the head is permissible, though it is difficult to see how it can be of any avail. The patient should lie with the head low.

In cerebral thrombosis we have to deal with diseased arteries, and in senile patients a weakened heart. Our treatment must be directed against symptomatic conditions. If the heart is weak, we must administer *Strophanthus* or *Digitalis*, preferably the former. Under no circumstances should the patient be treated by purgation. If vascular pressure is high, we may prescribe *Sodium nitrite*, *Glonoïn*, *Erythrol tetranitrate*, or *Amyl nitrite*.

The after-treatment of the attack, and the general nursing methods required other than those above mentioned are identical with those recommended in the section on cerebral hæmorrhage.

Thrombosis of the Cerebral Sinuses.

The treatment of thrombosis of the cerebral sinuses must vary as the lesion is septic or marantic in origin. The latter is practically always a terminal event in the course of certain exhausting diseases, and may be said to be beyond the pale of relief. Septic thrombosis, when involving the lateral sinus as the result of diseases of the middle ear, offers one of the brilliant examples of the success of cerebral surgery, for if operation be undertaken before systemic infection has taken place, the chances of recovery are great.

To attain success, the operator must be thorough in removing every infective focus. The mastoid cells and antrum must be dealt with thoroughly. If, after exposure of the sinus, the diagnosis is confirmed, the operator will be wise if he next ligates the internal jugular vein to prevent the carrying of infecting particles into the general circulation. The sinus may then be opened and obliterated. A little bleeding is beneficial rather than otherwise, as it serves to wash out septic substances from the venous channels.*

Cerebral Tumors.

The only radical treatment for intracranial tumors, with the exception of the syphilomata, is removal by surgical means. The growths amenable to this procedure are limited in number, being variously estimated from 4 per cent. (Seidel) to 20 per cent. (Dana). To be successful, the operation must be undertaken while the tumor is yet small and before secondary cerebral changes have been started. In view of the occasional brilliant results attained in individual cases one should not permit himself to become too enthusiastic over the possibilities of brain surgery, and thus neglect the moderate relief to be afforded the patient by medical means. The percentage saved by indiscriminate operations is so small that we should err, if at all, on the side of conservatism.

Logically, the medical treatment of brain tumor must be considered first, for the patient will insist upon trying it before he submits to an operation. In view of the excellent results obtained from the medical treatment of syphilitic tumors, the unfavorable results attendant upon tumors of all other varieties, and the ever-present possibility of an unknown or forgotten syphilitic infection, it is incumbent upon us to give the patient the benefit of the doubt, and put him through a course of *Potassium iodide* before deciding that operation should be tried. My faith in the Potassium iodide in syphilitic cases is unbounded, for under its use, as directed in the section on the treatment of syphilis, I have seen symptoms disappear with a rapidity

* The reader will find the best exposition of the operative technique of septic sinus thrombosis in Macewen's *Pyogenic Infective Diseases of the Brain and Spinal Cord*. Published by Macmillan & Co.

that borders on the dramatic. I am aware that Horsley, Gowers and some others have denied the curative influence of this drug in these cases, but I believe without sufficient warrant, for English physicians have not yet learned to use the iodide according to the American method. The duration of the period over which this treatment should be carried out should not be too long. Horsley says it should not be over six weeks, and Starr makes the period three months unless the symptoms grow rapidly worse, showing the futility of internal medication. The conclusion that the remedy is curative is not to be drawn unless that improvement is decided. In nearly every case it should be evident by the end of the second week. A disappearance of all symptoms can only be effected in those cases in which the tumor has not existed sufficiently long to produce organic changes by pressure and otherwise in the contiguous brain structure. The secondary lesions may be regarded as mechanical and beyond the sphere of action of Potassium iodide.

Every tumor that improves under the administration of Potassium iodide is not syphilitic. Thrice have I encountered cases of sarcoma of the dura mater in which the administration of this drug in large doses produced such remarkable amelioration of symptoms that it was fast becoming our conclusion that the growths were after all syphilitic. Sudden death in one instance and gradual relapse in the others dispelled the delusion. The delay occasioned in one of the latter was unfortunate, for the case was one peculiarly favorable to operation. I have also erred on the other hand, for in one case I succeeded in accomplishing considerable with the iodide, but finally abandoned the drug as useless. Relapse occurred. The patient died six months later in the care of another physician. Autopsy discovered a large gummatous tumor.

The iodide treatment failing, the question of operation becomes the uppermost one. *What cases of brain tumor are suitable for operation?* In answer to this question it may be said that all tumors presenting symptoms enabling them to be definitely localized in a position from which they can be removed with a reasonable degree of safety are suitable for radical operation. The estimates from the post-mortem room show such to be from 4 per cent. to 20 per cent., as already stated. Some tumors are located so as to be removable had they presented symptoms during life; others present puzzling clinical features; hence it is that some neurologists have made claim for the lower figure quoted. The cases which are suitable for operation are those in which the tumor is located in or immediately beneath the cortex, and in the Rolandic area, the speech centres, the cuneus, and (if diagnosed) the frontal lobes. Tumors in the central portions of the hemispheres, of the large basal ganglia, the base of the brain, and of the medulla oblongata, are inoperable. The advisability of removing tumors of the cerebellum is debatable. Some good results have been recorded; but the majority of cases operated have resulted disastrously

If it is decided to operate, it is now due us to consider the dangers. In brain surgery more than in any other field does experience count for much in bringing success. Rapid, clean operating is necessary. The chief cause of death is shock. So well has this fact been recognized, that it has become a routine practice for surgeons to operate at two sittings. In the first, the skull is laid open over the suspected area. The patient is then permitted to recuperate for a few days, when a second operation is performed for the discovery and removal of the growth.

It is very important that the original opening in the skull be made sufficiently large. If there is any doubt at the time of the trephining it should be resolved in favor of the large opening. In the search for the tumor, the operator must bear in mind that any tumor which does not make its presence evident by some changes of the brain cortex, as absence of pulsation, discoloration, alteration in consistence, etc., is not possible of safe removal. Hence the too prevalent practice of probing in various directions of bygone years is to be condemned. It is better by far to make the search by enlarging the trephine opening.

Even though we fail to find the growth, the exploratory trephining is after all a good thing. Indeed, I am satisfied that in cases in which the diagnosis of brain tumor is certain, but the growth irremovable, it is a good thing to remove a large section of the skull to reduce intracranial tension. By this means pain may be greatly relieved, and the experience of Horsley and Keen shows that blindness from optic neuritis and its secondary atrophy may be prevented. In cases operated by the former, the neuritis began to subside within three weeks of the time of operation.

Lumbar puncture has been proposed as a palliative operation. There are undoubtedly cases in which it has greatly ameliorated the symptoms; but these are few. In cases of cerebellar growths it is dangerous, as it has caused sudden death.

If it is decided to treat the case medically, we are limited in our resources to certain remedies which have thus far given the greatest promise of utility, namely, *Belladonna*, *Conium*, *Hydrastis*, *Sepia*, *Calcarea carb.*, *Graphites*, *Baryta carb.*, and *Arnica*.

For the rest we are obliged to fall back on symptomatic treatment. The intense headache is the symptom which calls the loudest for relief. Concerning this, my opinions have undergone a very radical change, for in many instances, if not in all, prescription of analgesic remedies is necessary. My previous objection to them still holds in cases which stand a good chance of coming to operation, for their excessive use appears to favor collapse during or after the operation. In the cases reserved for exclusive medical treatment, the coal-tar derivatives, but especially *Acetanilid* and *Phenacetin*, are invaluable palliatives. They should be administered in doses sufficiently large to relieve suffering. If they produce undesirable

circulatory depression, then they should be combined with a cardiac stimulant, especially *Caffein* (see article on Headache). Sometimes the coal-tar derivatives fail utterly. Then *Morphia* is our last resource. The only objection to its use is the possibility of the forming of the drug habit; but that is a minor matter in the case of a patient whose days are already numbered.

The hygienic measures capable of relieving the headache include rest and quiet, and the application of hot or cold dressings, as the experience with the patient dictates.

Vomiting is very resistant to treatment; still, the measures which control the pain in the head generally lessen this symptom also. Dietetic and direct gastric treatment is unavailing.

For the insomnia, we may prescribe hypnotics, as *Sulphonal*, *Veronal*, *Trional*, *Chloralamid*, and *Methylene blue* (medicinal). The latter is the only one capable of doing any good when pain is the cause of the sleeplessness. In the majority of cases, we finally find ourselves obliged to fall back on *Morphia*. Quite frequently we obtain very good and refreshing sleep by simple hydiatric measures (see section on Hydrotherapy).

Paralysis and anæsthesia dependent upon brain tumor are not amenable to any treatment excepting the surgical. Other symptoms than those above mentioned should be treated according to general indications.

Cerebral Abscess.

Much can be done in the way of prophylaxis of cerebral abscesses. As stated in my work on Diagnosis (page 714), abscesses of the brain have a definite etiology, all cases originating in middle ear suppuration, traumatism of the head, metastasis, or tuberculosis. Traumatic abscess of the brain has no excuse for an existence, and yet cases will continue to be observed as long as there are careless people in the world, and this means until eternity. Their prevention lies in the careful antiseptic treatment of every wound of the scalp, however slight. In every case in which it is impossible to determine the condition of the structures beneath, or to clean the wound thoroughly, it is good practice make an exploratory incision in order that radical and efficient treatment may be instituted.

Otitic abscesses are only less excusable than the traumatic. Middle ear discharges should be cured promptly. The majority of cases will yield readily to the measures which can be employed by any educated medical practitioner. When he fails, after a reasonable time, he should insist upon the patient being placed under the care of an experienced otologist, who can certainly effect a cure. Once in a while, for reasons which we do not understand, cases will be observed in which the abscess is of rapid onset and while the suppurative otitis is still of recent origin.

No measures can be suggested by which we may prevent either the

tubercular or metastatic abscesses. We can treat the primary disease, it is true, but that avails us but little if it is of the character prone to involve the brain.

The main work of the physician in cases of brain abscess is the making of the correct diagnosis and the location of the lesion. It has been said in connection with other diseases that the physician wants too many data to insure his diagnosis, and this remark is true in the present connection. It so happens that in cases in which brain abscess is suspected, the other possible lesions are septic meningitis and septic sinus thrombosis. The former is almost inevitably fatal whether operated or not; and the latter cannot be cured excepting by surgical interference. We are justified then in advising operation as soon as there is positive evidence of septic intracranial disease. One thing that is apt to hold us back is the supposed difficulties attending the localization of the abscess. If we were to depend upon the so-called localizing symptoms, undoubtedly we would remain in doubt; but fortunately associated conditions do much to assist us in determining the site of suppuration. As these have an important bearing on the treatment, I present the following data dogmatically. It is to be understood that their value is relative, not absolute, and yet they explain the situation with sufficient frequency to make them good working rules.

Otitic abscesses are almost invariably situated on the same side of the brain as the diseased ear.

Otitic brain abscesses are nearly always located in the temporal lobes or the cerebellum, the former predominating by three to one.

Abscess of the temporal lobe is observed when the primary seat of suppuration is in the superior wall of the middle ear.

Abscess of the cerebellum occurs in conjunction with suppuration of the posterior surface of the petrous portion of the temporal bone or involvement of the mastoid.

As a rule, there will be found pathological changes connecting the primary suppurative focus with the abscess.

Less frequently, there may be observed healthy brain structure intervening between the middle ear and the abscess. In these cases, there may be observed a sinus thrombosis or purulent infiltration of the sheath of the seventh or eighth cranial nerve to carry the infection.

Abscesses from caries of the ethmoid or sphenoid bones are nearly always situated in the frontal lobes.

Traumatic abscesses are generally located immediately beneath the site of the traumatism. This rule is not as good a guide to us as are the rules governing the relationship between the location of the aural disease and the resulting cerebral abscess.

Metastatic abscesses may occur in any location, but are usually observed in the region supplied by the left middle meningeal artery, for the same

reason that embolism is more frequent in the same locality. They are generally multiple, and beyond the field of safe exploration. They are, therefore, inoperable.

Tubercular abscesses may occur in any location. They are usually inoperable.

As to the operation itself, it is good practice in otitic cases to open the mastoid prior to trephining. This gives us an insight into the local condition, and adds but little risk to the operation. It also assures us better asepsis. Then, too, if pus is found, its evacuation may clear up the case; if nothing is found and the symptoms are still serious, we are encouraged to proceed further; but be it understood, that if the mastoid suppuration is the cause of the serious symptoms, the relief will be both prompt and complete. A doubtful improvement in such cases generally means nothing gained and the necessity for intracranial operation. Then trephining should be resorted to promptly before there has taken place extensive destruction of brain tissue or the vitality of the patient has been seriously undermined. It is very important that the trephine opening be a liberal one. There should be no fear of operating in cases suggesting the diagnosis of brain abscess, for practically all such cases must die without surgical interference, and that too whether the diagnosis is correct or otherwise. When in doubt, operate, or rather have one experienced in brain surgery do it.

Hydrocephalus.

Very little positively reliable can be stated concerning the treatment of hydrocephalus. One cannot in a disease like the one under consideration speak authoritatively without an unusually large experience. This no one seems to have had. Considerable can be offered in the way of suggestions. One measure that has gained considerable reputation, and has been followed by some favorable results, is strapping of the head by adhesive plasters. A better procedure is the application of a band of elastic webbing, three inches in width, about the head at the level of the forehead. Care must be taken that the pressure is not so great as to produce redness of the parts or leave the imprint of the material on the skin. Sloughing may be produced by too tight pressure.

A measure that has received but little attention is the application of solar heat. Several physicians have reported their experiences with it. Locatelli reports one case cured; Nicita treated three cases successfully; while Somma obtained good results in five cases. The method consists in exposing the child's occiput to the direct rays of the sun for twenty minutes each day, gradually increasing the duration of the seance until the limit of thirty or forty minutes is reached. It is believed that the local sweating acts to remove a portion of the effusion, while the thermic irritation aids nutrition. Rodionoff reported a case in which the patient was

neglected by the mother after being well cared for until two years of age. The little one was more or less constantly in the sun. A spontaneous recovery ensued within a year.

Surgical measures, tapping of the ventricles, incision and drainage, have been recommended; but I cannot see that the reports of cases thus treated give us very much hope. Still, I should not hesitate to recommend one of these procedures as a last resource, for Unverricht, Phocas, and, it is presumed, others, have made considerable claim of the value of the procedure, based on personal experience. Only one or two ounces of fluid should be evacuated at a time. Quincke has recommended tapping of the spinal canal between the third and fourth lumbar vertebra and draining off one or two ounces of fluid. The amount of fluid withdrawn by lumbar puncture is often disappointingly small, owing to obstruction in the channels between the lateral ventricles and the subarachnoid space. Under such circumstances, but little can be expected from the operation. Still, the operation should be performed in all cases, as it seems to possess but little danger.

Sutherland and Cheney* have practiced an operation which has given excellent results in two cases in which they tried it. Briefly, it consists in establishing a permanent drainage between the distended lateral ventricles and the subarachnoid space by means of catgut.

The medicinal treatment of hydrocephalus must never descend to the level of routinism. The administration of remedies for the removal of effusions, as *Apis*, *Apocynum*, etc., will meet with disappointing results. Certain deep-acting remedies, like *Calcarea carb.* and *phos.*, *Sulphur*, *Silicea*, *Baryta carb.*, *Lycopodium*, *Mercurius*, *Kali hydriodicum*, *Psorinum*, *Arsenicum* and *Tuberculinum*, should be studied. Cases with syphilitic parents should receive anti-syphilitic treatment. Burnett reports a cure made with *Tuberculinum*, prescribed because of the patient's inherited diathesis. The indications favoring one or the other of these remedies are those evidencing constitutional peculiarities, and not the symptoms of hydrocephalus *per se*. The majority of the latter are purely mechanical, and can have but little weight in the selection of a remedy acting dynamically.

Aphasia.

The treatment of aphasia must be approached from a three-fold standpoint. In the first, and probably the one in which we attain the most brilliant results, the aphasia is utilized as a localizing symptom, which designates the situation of a lesion curable by surgery, as hæmorrhage, tumor, and abscess. The problem here is mainly diagnostic, and belongs to the study of cerebral localization and its diagnostic relations, for the

* *British Medical Journal*, October 15, 1898, p. 1155.

further consideration of which the reader is referred to my work on Diagnosis, page 854.

The second approach to the therapeutic study of aphasia is through the removal of the pathological lesion. By means of treatment directed to the improvement of the structure of the speech centres, we cure or improve the aphasia. The therapeutic measures in such cases differ in no particular from those employed in cases in which aphasia does not exist. These have been thoroughly expounded in the sections on Cerebral Hæmorrhage, Cerebral Embolism, and Cerebral Thrombosis.

The third approach is by education, commonly known as the pedagogic. It is applicable to the treatment of all cases of aphasia originating in non-surgical and non-progressive lesions. For obvious reasons, it is useless in the aphasia associated with general paralysis of the insane, focal or disseminated sclerosis, etc.

It will thus be seen that there can be no medicinal treatment for aphasia *per se*. We can administer remedies to improve the patient's general condition, and for the relief of the pathological process. A good example of the latter is found in those cases in which the symptom is the product of syphilitic changes, and is amenable to Potassium iodide. Respecting this remedy and its administration in all cases in which aphasia occurs between the ages of thirty and fifty years of age, and which are not explainable by the possibility of embolism and arterial degeneration consequent upon nephritis, this may seem an arbitrary statement; but aphasic patients are unable to give a history of syphilitic infection, and their families are not acquainted with their histories in this respect; hence it is a good working rule to give them the advantage of the chance, and administer the Potassium iodide. The results following this course are sometimes brilliant.

The pedagogic treatment has been called by Bastian * "Treatment to facilitate functional compensation." It is based upon the theory that education and practice will enable uninjured cells to take up the function of those that have been destroyed. Such treatment is much more successful in the very young than in adults. In fact, it is the rule for aphasia occurring in childhood to be perfectly compensated, and very little speech defect remains. It also varies with individuals, some of whom have a greater capacity for learning than have others.

The general principles involved in the teaching of the aphasic are those put in practice in the instruction of the deaf and dumb. Great attention to detail is necessary, and whenever possible the task should be left to an experienced teacher. It is necessary to consider the character of the aphasia, whether motor, visual or auditory, as our methods must vary according to the variety.

* *Aphasia and Other Speech Defects*, p. 341.

Cerebral Paralyzes of Infants and Children.

The utter hopelessness of curing and the difficulty of alleviating the clinical phenomena attendant upon the cerebral paralyzes of infancy and childhood makes the proper understanding of the causes of these conditions doubly important. In the study of the cases of the infantile cerebral palsies, one cannot but help being impressed with the almost complete ignorance of parents and families as to the time when the first symptoms became manifest. This is a difficult condition to understand, because the phenomena are so obtrusive that they should not escape the observation of even the most careless.

As matters of fact, we know that the majority of cases originate in the following ways :

1. During labor.
2. Traumatism.
3. Intracranial hæmorrhage occurring during the course of infectious diseases, or as the result of the violent straining incidental to whooping-cough, convulsions, etc.
4. Hereditary syphilis.

We now have our guides to the prophylaxis of the disease. There is a current misconception as to the etiology of those cases due to the accidents of parturition. It is the common belief that they are due to forceps pressure. This is a serious mistake, for very careful investigation of cases has demonstrated that delayed labor is the great factor in their production. The moral is plain : Rather than expose the child to the danger of prolonged or tedious labor, the forceps should be used as soon as indicated. Of course, unskilful use of the forceps has, on numerous occasions, produced serious traumatism of the head ; but such cases are almost negligible as to number in comparison with the army dependent upon tedious labor.

Traumatism as a cause is practically synonymous with meningeal hæmorrhage. The reader is therefore referred to the section dealing with that subject.

The lesson to be derived from the third etiological factor is that whooping-cough, infantile convulsions, should be treated as serious diseases, to be terminated by treatment as early as possible, and to be mitigated during their course.

Very few cases present the stigmata of hereditary syphilis. Still fewer would be observed if physicians were more insistent upon treating syphilitic pregnant women with a view to the prevention of the transmission of the disease to their offspring.

If perchance any of the above causes should operate to produce the underlying lesions of infantile cerebral palsies, we must institute the same plan of treatment as we would had the lesion occurred in adult life. Intra-

cerebral hæmorrhage should be treated by rest and remedies ; meningeal hæmorrhage, from whatever cause, demands operation ; the syphilitic cases should receive mercury by inunction.

Most cases are not brought to the serious attention of the physician until the child is shown to be unable to walk. Some parents postpone consultation even longer in the foolish belief that the little one "will grow out of it." The case is by that time absolutely incurable, and palliation is about all that remains for us. The symptoms which demand relief are the convulsions, the mental defects, the contractures and deformities, the paralyses, athetosis, etc.

Of all the varieties of recurrent convulsions, there are few as hopeless as to cure as those incidental to the infantile cerebral palsies. One can resort only to palliative measures, and this means the administration of the bromides. At the same time it must be remembered that *very many* of the patients are intolerant of these drugs, and their administration must be conducted only by one possessed of a full knowledge of their physiological action. Bromism is readily induced. The complete suppression of the attacks is rarely possible, even when extravagantly large doses are prescribed. One must be satisfied, therefore, with reducing them to a minimum, having due regard to the general effect of the drug as well.

In these cases even more than in idiopathic epilepsy it is important that the administration of the bromide be supervised by the physician, and yet it is in this class more than any other that this injunction is disobeyed.

When the bromides fail to give a satisfactory result, the Flechsig treatment, as outlined in the article on epilepsy, may be tried.

Some cases thrive best on a properly selected diet. These mentally enfeebled patients are often exorbitant eaters. Their morbid appetites must be properly controlled, and improper articles of food forbidden. A vegetable and milk diet is probably the best in the majority of instances. Care in this direction is often sufficient to ameliorate the epileptic state most markedly.

The propriety of surgical intervention must be seriously considered ; and yet it is in exceptional instances only that operation cures the epilepsy or the paralysis. The underlying pathological condition may be briefly stated as "a hole in the brain." To treat such a condition successfully is inconceivable. Practically, we have learned that in cases where the convulsions are plainly focal, trephining and excision of the convulsing centre effects considerable improvement. Besides, the operation offers the hope that each case may be one of those few fortunate ones in which the lesion is removable, and a brilliant result is attained.

Better results would undoubtedly follow operation if parents did not delude themselves by the expectation that the operation is the whole means of cure. After the case has passed out of the hands of the surgeon, it should

still be subject to all the hygienic, medical and educational supervision indicated by the symptoms.

For the mental enfeeblement no course is more successful than education under the supervision of instructors experienced in the care of the feeble-minded. Large schools are objectionable, as it is but rarely that their clients receive any attention amounting to more than mere kindness to the body. A select school with a limited patronage should be chosen whenever the circumstances of the family will permit of such a course. Private instruction at home is rarely of much avail, as teachers of proper experience cannot be secured. The large State institution will give better results to those unable to pay than will be obtained at home.

The contractures and deformities are best treated by suitable orthopædic apparatus, and, when necessary, tenotomies.

When the athetosis is very severe, the special measures which may bring relief are splints, nerve stretching, and excision of the cortex central to the affected part. In some few cases this symptom has been so obstinate and caused such suffering that amputation of the affected member has been performed.

Prolonged medication, when the symptoms have become stationary, is useless. Prior to that time, medicines must be administered solely on constitutional indications. Syphilitic cases, it is needless to say, require *Mercury* and the *Iodide of potassium*; hæmorrhagic cases, *Arnica*, *Rhus*, *Causticum*, *Calcarea*, *Sulphur*, *Baryta carb.*, *Aurum et Natr. mur.*, and *Lycopodium* are often called for by constitutional states. The efficiency of these remedies can only be secured after months of administration.

Glosso-Labial Palsy.

Glosso-labial palsy or bulbar paralysis may be either acute or chronic. The acute form is usually rapidly fatal, resisting every method of treatment. All that we can do is to feed the patient by the stomach tube, as directed in the chronic form, and treat symptoms. We are oftentimes obliged to administer stimulants to overcome attacks of syncope. Most cases succumb within a week of the onset.

Chronic bulbar paralysis is susceptible to treatment, but it likewise is ultimately fatal. In two of my cases life was prolonged for three and two years respectively. The nutrition of the patient is an important factor in success. Just as soon as there is difficulty in swallowing, the patient should be accustomed to the use of the tube, through which should be administered such nutritious foods as good broths, milk, and raw eggs. To prevent thirst, it is a good plan to supplement each feeding with the tube by pouring in some water. Deglutition must be carefully watched, for as soon as the patient evinces any tendency to get food into the air-passages, tubal feeding must be commenced, otherwise we are liable to have an aspiration pneumonia supervene.

Faradization of the muscles of the palate and tongue and the use of strong galvanic currents through the neck and spine have greatly benefited two cases under the care of Kussmaul. Where dysphagia is a prominent symptom, electrical applications may be made so as to promote deglutition. The positive pole should be fixed to the nape of the neck, while the negative is rapidly moved downward over the side of the larynx. When swallowing becomes impossible, then recourse must be had to the stomach tube for feeding purposes. Food then must be in a more or less liquid form. The frequent use of the tube may injure the parts, so as a matter of precaution rectal alimentation may also be employed.

Anacardium has been recommended, but on what grounds it is difficult to understand. *Plumbum*, owing to its special action on nuclear cells, should be as distinctively homœopathic to this affection as it is to progressive muscular atrophy. *Causticum*, from its utility in paralysis of single parts or single nerves, has been recommended by Farrington in this disease, although he expresses an earnest doubt that it will accomplish anything. It is a suggestion merely, a straw to grasp in a desperate situation. *Argentum nitricum*, *Phosphorus*, and *Mercury*, may also be studied.

To me there is nothing more distressing than the patient in the final stages of this disease. He lies in bed with mind alert, hearing and seeing everything that goes on ; and yet he is unable to speak by word of mouth or gesture ; food and drink must be given him artificially. Truly, he has been buried alive in his own household.

CHAPTER XXII.

DISEASES OF THE SPINAL CORD.

Meningitis.

The treatment of spinal meningitis demands a careful investigation as to the causative factors, and a study to determine the particular meningeal structure involved. External meningitis, also known as pachymeningitis, is almost always a secondary affection, resulting generally from caries or syphilitic disease of the vertebræ. The disease may likewise arise from deep sacral bed-sores, in which case the inflammation is very frequently widespread and acute. It has occasionally been known to follow an ascending neuritis. As a primary affection, it may occur in young cachectic individuals as the result of exposure to cold.

Arising from whatever cause, rest constitutes an important part of the treatment. Cases dependent upon vertebral caries must be treated by the plaster jacket. *Silicea*, *Fluoric acid*, *Calcareæ*, *Sulphur*, and similar remedies may be thought of.

Syphilitic cases require *Mercury* or *Iodide of Potassium*, or both.

The acute cases require *Belladonna*, *Hepar*, *Aconite*, or *Bryonia*.

Cases dependent upon incurable conditions, as malignant growths of the vertebræ, call for palliative treatment, principally in the shape of *Morphia* hypodermically.

Acute internal meningitis is commonly the result of morbid blood states, as pneumonic fever, typhoid fever, syphilis, and tuberculosis. The tubercular cases are nearly always fatal. The cases following pneumonic and typhoid fevers offer the most favorable prognoses, bad though these be. As with external meningitis, absolute rest is a *sine qua non*.

It is undesirable for the spine to be the lowest portion of the body; so when consistent with the patient's comfort the lateral decubitus should be adopted. The greatest care and judgment must be exercised to avoid the formation of bed-sores, and to prevent cystitis. The prevention of bed-sores will be fully described in the article on acute myelitis. The cystitis is readily obviated by emptying the bladder regularly with strict observance of cleanliness. Hot poultices or ice-bags to the spine prove valuable in some cases. Lukewarm baths often lessen the tendency to bed-sores and cystitis.

Aconite is the remedy best adapted to the early stage to control the oncoming inflammation. *Ferrum phos.* is likewise called for early in the

febrile stage, when the pulse is soft and full, and before exudation has taken place. Later, one must have recourse to remedies suited to inflammatory conditions of serous membranes, *Bryonia* being especially valuable in this respect. This remedy is highly endorsed by Hughes. It is especially adapted to rheumatic cases. *Rhus* is likewise indicated in rheumatic cases, and also when the disease has arisen from exposure. *Apis* is called for in tubercular cases; *Hepar*, when suppuration ensues. *Belladonna* is a valuable remedy when pains become a prominent feature.

Causticum, *Hypericum*, *Cuprum*, *Veratrum viride*, *Secale*, and *Oxalic acid* have been reported as used successfully in meningitis interna.

In those rare cases in which the above remedies fail to control the pain, *Morphia* may be resorted to.

Chronic Internal Meningitis.—Rest is just as important in chronic as in acute spinal meningitis, though its value is not as fully recognized by practitioners. When possible, the patient should lie prone or on one side, as thus there will be decidedly less tendency to congest the spinal cord and its membranes. Counter-irritation, even to the extent of the actual cautery, has been strongly urged by some authors; but, in the majority of cases, it is entirely unnecessary. Still, in cases failing to yield to other carefully planned treatment, resort to it should be had. Syphilitic cases require *Potassium iodide* or *Mercury*, or both. In other cases, one of the remedies mentioned under the head of acute spinal meningitis or myelitis should be tried.

Acute Myelitis.

Acute transverse myelitis is rightly regarded as a disease presenting a gloomy prognosis. This, however, should not deter us from instituting active measures in the patient's behalf, for by so doing we not infrequently produce remarkable alleviation of suffering and sometimes save a life.

The cardinal principles in the treatment of acute myelitis are rest and cleanliness. No words can be too strong to express the stringency with which such rest must be enforced. In the earliest hours of the illness much harm is often done by injudicious relatives, who encourage the patient to keep moving in the hope that he will be able to throw off the trouble. Later, when the paralysis has made the patient helpless, it is difficult to keep the patient in bed; but this does not satisfy the demand for absolute rest. *The patient must be kept absolutely quiet in bed.* Of course, his position must be changed from time to time, but such change should never be made by the patient's own efforts, but always by the nurse or attendant.

One of the great dangers attendant upon acute myelitis is bed-sores. Treatment must keep this in mind constantly. The best preventive is the water-bed, which should be brought into requisition early, before the sores have had a chance to form. Patients may object to the expense of this contrivance. If so, they must be made to understand that it will prove to

be economy in the end, as it will lessen the subsequent bills for medical attendance and nursing many times over its cost. The greatest care must be exercised to prevent too long-continued pressure at any one point. Even long and close apposition of the legs may produce ulceration at the inside of the knee and ankles, and the light pressure of the heels against an ordinary mattress not infrequently produces sores in that locality.

Besides the water-bed, the patient must be kept scrupulously clean and dry. Male patients who have urinary incontinence should have a urinal always in position to catch urinary drippings. With female patients, the nurse should keep pads of absorbent cotton wrapped in antiseptic gauze against the genitals, and these should be removed and replaced by others at least every two hours. The sheets and bed-clothing should be kept smooth and free from wrinkles.

When, despite our best efforts, bed-sores do form, they should not be superstitiously regarded as some mysterious dynamic entity, and some absurd old-woman's treatment adopted. On the contrary, a common sense view of the situation should prevail, and the treatment conducted on strict surgical principles. If catheterization becomes necessary, careful aseptic precautions must be adopted. As local applications for the prevention of bed-sores, weak solutions of tannin or alum and plain alcohol may be recommended.

The ice-bag may be applied over the particular portion of the spine which is believed to be the focus of inflammation.

Counter-irritation, as by the actual cautery, blisters, Iodine, etc., is dangerous practice. There is little prospect that it will do any good, and there is every probability that it will make the work of preventing bed-sores more difficult.

Should cystitis, pyelitis, and other urinary complications appear, they must be treated in the same way as we would treat the same conditions occurring under other circumstances. (*Vide* Chapters on *Diseases of the Kidneys* and *Genito-Urinary Organs*.)

With the subsidence of the acute symptoms, the patient should be gotten into a rolling-chair for a certain part of each day, and placed in the open air free from exposure to the sun. The paralysis should now be treated by electrical stimulation of the muscles and massage. The diet should be made more generous, with the idea of improving nutrition.

Compression myelitis arising from traumatism, and due, as a rule, to dislocation or fracture of the vertebræ, should be treated by laminectomy. Unfortunately, the results of operation are not satisfactory, because the spinal cord is usually crushed beyond the hope of repair. Nevertheless, it is good practice to operate, because each case may be one of the fortunate ones. Immediate operation is oftentimes objectionable because of the added shock. Late operation, *i. e.*, several weeks or months after the accident, is

practically useless. I have never felt satisfied that improvement following the latter cases has been due to the operation, and yet I readily acknowledge that I may be mistaken in this opinion.

The selection of remedies is to be guided by the nature of the exciting cause, or the diathetic condition present. Traumatic cases require *Arnica*, *Aconite*, or *Hypericum*.

Those arising from exposure to cold or damp require *Rhus* or *Dulcamara*.

Cuprum ars. and *Arsenic* have been known to produce typical cases of myelitis, and should be administered in the uncomplicated cases.

Mercurius and *Kali hyd.*, singly or in combination, are the favorite old-school remedies in myelitis. As shown by Baehr and Kafka, they are perfectly homœopathic to the peculiar character of inflammation present. It is not necessary to restrict their dosage to the potencies. If necessary, there should be no hesitation in giving the crude drugs.

Mercury has all the phases of the progressing paralysis of the extremities, of the bladder and rectum, with tendency to shocks and twitching, spinal pains aggravated by pressure, and anæsthesia.

In the latter stages of the disease, when it tends to pursue a chronic course, *Strychnia* is strongly advocated by Hale. There is every reason to expect considerable from this drug. Following Hale's rule of dosage, it should be given in a crude form, one sixtieth of a grain three times daily. Jewell, a prominent old-school neurologist, has likewise advocated the use of *Strychnia* in myelitis, for which action he has met with considerable criticism from his colleagues.

Electricity may be used after the acute symptoms have subsided. Rockwell has reported one case of recovery from transverse myelitis by spinal galvanization without resort to other measures. The continuous current was first applied to the spine. Then sharp and strong interruptions were practiced in order to re-awaken irritability. Applications were also made to the muscles.

Chronic Myelitis.

Chronic myelitis is an exceedingly rare disease. Its treatment is very unsatisfactory, and yet numerous cases of unexpected recovery are within the experience of most of us. The constitutional cause of each case must be discovered and treated. Syphilitic cases, which probably outweigh the others in frequency, yield very nicely to anti-syphilitic medication, *i. e.*, Potassium iodide and Mercury. Originating in the course of chronic nephritis or diabetes, the treatment must be directed to the fundamental disorder. The great majority of the non-syphilitic cases are absolutely incurable and progress slowly from bad to worse. The treatment of such must be conducted on general principles, moderate rest, daily airing in the rolling-chair and good food.

In the majority of cases, medical treatment should be conducted according to symptomatic indications as they arise, irrespective of the existence of the myelitis. The remedies which may be suggested as having some utility for the myelitis itself are *Arsenicum*, *Phosphorus*, *Mercurius*, *Aurum mur.*, *Plumbum*, *Conium*, *Zinc*, *Picric acid* and *Rhus tox.*

Acute Poliomyelitis Anterior.

It is in exceptional cases only that poliomyelitis anterior is recognized in its first stage. The most that then can be done by way of treatment is attention to symptomatic details, as the regulation of the diet, management of the fever, convulsions, etc. Later, when the paralysis appears, the diagnosis is clear, and the therapeutic indications become well defined. At this stage, the child experiences but little discomfort, and evinces a desire to get out of bed and play about as actively as its disabled condition will permit. To permit it to do so is a grave error, which may make all the difference between fair recovery and absolute disability of certain muscles. Under any and all circumstances, absolute rest should be enjoined, and this rest should not be interfered with by ill-judged applications of faradism to the affected muscles for therapeutic purposes. The paralyzed limbs should be well wrapped in raw cotton or woolen fabric. Theory would seem to indicate the wisdom of maintaining the child in a recumbent position on its side or face, as such posture must tend to lessen the flow of blood to the spinal cord.

Poliomyelitis anterior exhibits no tendency whatever to the formation of bed-sores or paralysis of the sphincters. The employment of counter-irritation is not, therefore, attended by the danger incident to acute transverse myelitis. For this reason, Starr * is very emphatic in recommending "mild form of counter-irritation along the spine, which is best done by a paste of mustard one part, and flour three parts, applied in a poultice along the back, and removed as soon as the skin is reddened, and then renewed after three hours, so that at least for a week there shall be continual irritation without the discomfort of a blister. The frequent application of dry cups along the spine may be used for the same effect."

If fever is persistent or high, it should be controlled in a measure at least by sponging with equal parts of cool water and alcohol.

At the end of the first week, it will be well to test thoroughly the reaction of the affected muscles to both galvanism and faradism, *but this is for diagnostic and prognostic purposes only*. Although at this time peripheral electrization is at least useless, if not harmful, galvanization of the affected area in the cord may prove beneficial *if a mild and continued current be used*. A large well-moistened sponge electrode attached to the positive pole is applied over the cervical or lumbar enlargement or both, according to the

* *Organic Nervous Diseases*, p. 218.

region affected, while the negative electrode is applied to some indifferent part, probably best on the anterior surface of the body. The sittings should be for five minutes and should be repeated daily. Along with rest and galvanism, the proper internal remedy should be administered.

Aconite is at once suggested because of the initial fever. It will, however, have lost its usefulness when the appearance of the paralysis announces the localization of the inflammation. Then we must look to *Belladonna* or *Gelsemium*. The latter remedy has been highly recommended as the best in the early stages of acute poliomyelitis. Its provings show it capable of producing motor without sensory paralysis. It is also a valuable remedy in the early stages of infectious febrile diseases, of which acute poliomyelitis is possibly one.

When, after the paralysis has appeared, the fever and other symptoms of inflammatory action continue, *Belladonna* will be the remedy. The higher the degree of local inflammation, the more sudden the paralysis, the more certainly will it be indicated.

After the stage of regression has commenced, judicious applications of electricity to the paralyzed muscles will be of value. In those cases in which the muscles fail to respond to the faradic current, that current will be of no avail, and galvanism must be employed. The current selected should be of sufficient strength to produce muscular contractions and no stronger. The positive pole should be placed on the spine over the diseased area in the cord, and the negative over the motor points of the paralyzed muscles in turn. In fat subjects and in restless infants this may be impossible, in which case the positive electrode may be placed as above, while the negative is stroked over the paralyzed limbs. Care should be taken in making these applications that the muscles are not equally stimulated. Those muscles whose spinal centres have borne the brunt of the disease are the ones which should receive the greatest attention, while those which are but slightly affected require little or no electrical treatment. The sittings should be short at first, so as not to fatigue the weakened muscles.

If, as frequently happens, the child shows strenuous objection to the electrical applications, it is wise to desist, for any benefit that may be derived from them is more than counterbalanced by the crying, struggling, and terror. We should then endeavor to overcome the little one's fears by applying the electrodes without any current passing. Thus he will learn that no pain is produced. Having secured his confidence, we may pass the current, mild at first, but increasing its strength little by little until one of efficiency is in use.

At the time these applications are commenced, measures should be adopted to preserve the warmth of the limbs. Twice daily they should be bathed for fifteen minutes in water as hot as can be comfortably borne.

Regular friction and massage of the paralyzed muscles must be practiced daily. The inunction of cod liver oil with the massage is a great aid to nutrition, and should be practiced regularly.

The frequency of the applications and the long time over which they must be continued make it impractical for the average individual to employ a competent masseur for this work. It is a good plan, therefore, to have the mother or some other member of the family take lessons in the application of massage to the particular case in hand.

The maintenance of a proper degree of warmth in the affected limbs is another important item in the treatment. To this end, discretion in the selection of proper clothing is necessary; either spun-silk or wool should be worn next to the skin. Before clothing the limbs, care should be observed that they are well-warmed by artificial heat. At night, when the little invalid is in bed, it is important that he be well covered, though never to the excess of producing discomfort. In warm weather—and it is at this time that most cases appear—a union suit of proper weight and texture with foot pieces is all that is necessary. Morning and evening, the paralyzed extremities should be bathed or immersed in warm water, the temperature of which may be gradually increased, but never to the extent of exciting discomfort.

The limbs should never be permitted to remain in a dependent position, as this must interfere with the proper circulation of blood through them. Instead, they should be maintained as far as possible in a horizontal or elevated posture.

If the patient is old enough, and if he has recovered sufficiently, moderate exercise should be recommended, providing there is no deformity of the limbs resulting from the unequal distribution of the paralysis, for if such be the case, exercise will strengthen both slightly and severely paralyzed muscles alike, perhaps the former more than the latter, and so intensify the deformity. By a little ingenuity gymnastic apparatus for the exercising of individual muscles or groups of muscles may be devised and used with good effect.

A very important desideratum in the late stage of acute poliomyelitis anterior is the prevention of deformities. Nothing, of course, can be done in the way of preventing shortening of the paralyzed limbs, other than by the enforcement of the directions already given for favoring local and general nutrition. The various forms of talipes may be prevented in some cases by passive manipulations of the joints. When shortening of tendons occurs, there is no remedy aside from tenotomy. This should always be performed by an experienced orthopædic surgeon, for it is a matter of experience to know just how far one should proceed in any given case. Following the operation, suitable braces should be adjusted, and this again is a subject for the orthopædist's attention. It certainly should never be left to the

opinionated brace-maker, whose cephalomegaly is always in excess of his good sense.

When muscles are so far gone as to produce a "flail-joint," the function of the paralyzed limb may be improved by an operation for anchylosing the loose joint. Such an operation should never be performed at the discretion of the general practitioner.

Of late years, Ballance and others have treated some old cases of poliomyelitis by grafting of nerves, and the result has been fairly satisfactory, *i.e.*, useless limbs have been made useful.

In the late stages of the disease, when the principal system is the paralysis with atrophy and deformity, *Plumbum* is the remedy on which we should mainly rely.

Graphites may be suggested as an empirical remedy, on account of its influence over scar tissue. It should tend to lessen the cicatricial deposit in the delicate spinal structure.

Causticum is likewise a valuable remedy which has yielded good results in practice.

The influence of *Thiosinamine* and *Fibrolysin* over scar tissue, suggests trial of these drugs hypodermically. They can do no harm and are well worthy of trial.

Acute Ascending Paralysis.

The therapeutics of Landry's or acute ascending paralysis is largely conjectural. Little or nothing can be said of the results obtained thus far from treatment. One is obliged to follow theoretical indications. Absolute rest in bed from the very first is essential. At the same time, the diet must be easily assimilable and highly nourishing. The prognosis is generally regarded as highly unfavorable. At the same time, we may take comfort in the fact that several cases diagnosed as Landry's or acute ascending paralysis have recovered. Unfortunately, we are not able to say positively why they "got well."

Ledum, *Conium*, *Aluminium*, *Gelsemium*, *Cocculus*, *Rhus*, and *Secale* have been suggested as remedies from which to make a selection.

Locomotor Ataxia.

The successful treatment of locomotor ataxia involves attention to details. This disease, though universally admitted as incurable, is nevertheless susceptible of remarkably good results when systematic treatment is employed, and the patient submits himself to the intelligent care of his physician. I have seen many cases of locomotor ataxia in which symptoms went rapidly from bad to worse, and early complete disability resulted. Practically all of them were individuals who had become terror-stricken on being made acquainted with the nature of their illness. As a

result, they were only too ready to fly to any quack who promised them more than could the legitimate practitioner. Such, indeed, is the history of cases seen by other physicians. Many of them take to quack manipulations and so acquire worse ills than those from which they are already suffering. Still others have recourse to the goat's lymph treatment, a therapeutic fallacy to which altogether too many of the physicians of both schools of medicine have given some adherence. Recourse to therapeutic procedures of such doubtful value and reason are based upon the unfortunate gloomy attitude which too many of us assume as to results. If we would but take the time to explain the correct nature of the illness, dwelling upon the fact that details as to treatment are everything, and take an active interest in supervising their management, we would save the poor ataxic from his arch enemy—the quack.

The majority if not all of the patients with locomotor ataxia have had syphilis. The question of specific medication therefore becomes a momentous question. Some practitioners condemn it *in toto*. Others express the greatest confidence in it. My own personal experience is in its favor. Every case of locomotor ataxia in which the syphilitic history is undeniable should be subjected to a course of *Potassium iodide*. We should not expect that by means of this drug we can remove all symptoms and make a complete cure, as in many other syphilitic diseases. We can, however, ameliorate symptoms already existing, and retard or even stop the course of the disease. My practice has been to start all such patients on small doses of the drug and gradually increase the daily quantity, as advised in the section on the treatment of syphilis. It is very seldom that I keep up the drug longer than two months. The maximum dose with me has been, as a rule, one drachm of the saturated solution three times daily. This course of Potassium iodide may be repeated with advantage once or twice a year, though not necessarily in doses as large as those above recommended or for so long a period of time.

When the disease progresses despite our best efforts, we should advise a six weeks' course of absolute rest in bed. Of the value of this I am fully assured, and yet I am aware that it is a measure which may occasionally bring discredit on the practitioner. People in general have a prejudice against the rest treatment, for, they say, the rest is weakening. If we happen to be so unfortunate as to gain nothing by the rest, and the disease progresses despite the rest, it is natural for such individuals to blame the rest and not the progressive pathological changes for the unfortunate result. For our protection, then, we should always state the situation plainly. While the patient is confined to his bed, he should have regular skilful massage, not because it has any special relationship to the cure or relief of locomotor ataxia, but because it relieves the patient of any of the undesirable effect of exercise, and enables him to take a normal

quantity of food. The discovery of the value of rest in this disease was accidental. It was observed that patients, who, by reason of their severe lightning pains or other disabling symptoms were obliged to take to their beds, were nearly always benefited thereby, the improvement continuing for a long time after getting about once more. Some neurologists oppose the rest treatment as liable to produce hypostatic spinal congestion, and thus aggravate the disease. This objection, to me, seems of little weight, for it is not necessary that the patient shall be kept in one position, and the fact that the treatment has proven satisfactory in all cases in which I have tried it outweighs such theoretical objections.

It is very important at all times throughout the patient's life that he save himself from any unnecessary expenditure of strength. This is an important injunction, because many people and some few physicians entertain the idea that exercise is a panacea for all troubles having a semblance to paralysis.

Electricity is a necessary adjuvant in the treatment of ataxia. Both galvanism and faradism must be employed. Erb's combined galvanism of the spinal cord and sympathetic is the best central application. The negative electrode is placed over the superior cervical ganglion of the sympathetic on one side, while the positive is applied to the lumbar region of the spine to the opposite side of the spinous processes. A current of about from six to eight milliamperes is made to pass for one minute and a half. Then the electrodes are shifted to opposite sides. Thus, if the negative has been over the superior cervical ganglion of the left side, it is placed over the right; and the positive, which has been to the right of the spinous process of the lumbar vertebræ, is changed over to the left. The current is allowed to pass through these parts for another minute and a half. Then the negative electrode is placed over the spinous processes of the cervical vertebræ, and the positive over those of the lumbar. This occupies another minute and a half. After this the limbs, and possibly the trunk, are thoroughly treated by the faradic brush, the current being as strong as can be conveniently borne. These sittings should be given on alternate days. Various symptoms arising in the course of the disease, as paralysis of certain groups of muscles, will call for electrical treatment which will differ in no manner from that employed in those cases where the same symptoms have arisen idiopathically or in connection with other pathological conditions.

Among the special symptoms demanding relief, the lightning pains are the most important and insistent. The patient's suffering, as a rule, is truly horrible. As palliatives when the pains have become severe, we find the coal-tar derivatives invaluable. Antipyrin is the most efficient of these; Antifebrin or Acetanilid and Phenacetin coming next in order. Exalgin has also been highly praised, but I have never used it. Antipyrin

in doses of three grains administered hypodermically will often give relief inside of three minutes. It must not be forgotten that this drug is highly irritating locally when thus administered. It is always wise in these cases to administer these drugs with care and discrimination at first; when the patient's tolerance is assured, then they may be given with more liberal hand. Under no circumstances should the initial dose be more than five grains; continued study of individual cases soon teaches the physician the proper dose and frequency of administration. Morphia must be the final result when other measures fail; but one must face the unpleasant fact that when once begun, its use will probably become regular and the Morphia habit started. I myself have never been obliged to use it since the introduction of the coal-tar derivatives. On the other hand, it has been my misfortune to be obliged to treat cases in which the above strictures respecting the use of Morphia has not been observed, and sadder and more intractable illnesses it has not been my lot to witness. The application of Chloroform or Bisulphide of Carbon to the painful areas has been recommended by different authorities. *Aconitia* and *Cocaine* applied by cataphoresis have also been recommended. This medication and the drugs do not appeal to me as of much value, so I cannot speak from experience.

Of the newer remedies, *Methylene blue* is fairly satisfactory as a palliative of the lightening pains. But one dose of three grains need be given daily. The only objection to its use is the urinary irritation it sometimes occasions. It is said that this may be overcome in a measure by combining the drug with nutmeg. When Methylene blue does act favorably, the relief is of longer duration than is the case with other analgesics.

Even though I speak thus favorably of the various analgesics in ataxia, I must insist that the patient while taking them be kept under the supervision of the physician. The relief they give is usually such that patients are apt to disregard all hygienic rules and go about as if in their usual condition. Such a course is fraught with danger. In the long run it is certain to prove disastrous.

C. Negro, of Turin, has used *Santonine* successfully for the relief of the pains. He gave six grain doses at intervals of three or four hours.

Pilocarpine muriate hypodermically has the endorsement of some physicians as a means of relieving the lightning pains. Owing to its effect in exciting profuse sweat and bronchial secretion, it should not be used until the other measures recommended have failed.

We need not confine our palliative measures for the relief of pains to the administration of drugs. The pains, though peripheral, are really dependent upon changes in the posterior nerve roots; hence, by applying hot-water bags to that portion of the spine which is tributary to the painful area relief of suffering may be secured. Success has also been obtained in very obstinate cases by the actual cautery applied very lightly over the

spinal column from the cervical to the lumbar region. The cauterizations should be performed with care, and each burning should cover but a small point.

The *prolonged warm bath* may also be used. The water should be at a temperature of from 98° F. to 102° F. and the seance should continue from fifteen minutes to half an hour.

The gastric and other crises are more resistant to treatment than the other variety of pains. When possible, they should be relieved by the coal-tar products, as above recommended. But when these fail, as they frequently do, we are obliged to fall back upon Morphia. Fortunately, the period over which this drug must be used is comparatively short; hence, if care be taken, and the administration of the drug kept entirely within the control of the physician, there need be but little danger of the formation of the Morphia habit. When the gastric crises are associated with vomiting, it is often necessary to feed the patient by the rectum. As palliative drugs, we may administer *Cerium oxalate* in doses of three grains four times daily, or *Cocaine* in doses of one-sixth of a grain every three to four hours. The symptoms may also be alleviated in a measure by the application of ice over the epigastrium and by the faradic brush over the upper abdominal wall. *Atropia*, gr. $\frac{1}{400}$, three to four times daily, will often prove of service, not only in the gastric but in the other visceral crises as well. *Solanine* has also been highly recommended for the relief of the gastric crises.

The *laryngeal crises* cause suffering by reason of the associated spasms of choking. This makes them dangerous. Under such circumstances we may use inhalations of chloroform, which, however, should never be pushed to the extent of complete anæsthesia.

Urinary retention and incontinence require the same attention they would were the cause other than ataxia. A very important precaution must be observed. In all manipulations about the bladder very strict attention must be paid to antiseptic technique. In patients with ataxia these precautions should be as great as if one were preparing for a capital operation. It is not uncommon for catheterization in the tabetic to be followed by violent attacks of cystitis, which yield only after persistent washing of the bladder with antiseptic or sterilized solutions. Carelessness in securing evacuation of the bladder, producing retention and overflow, may lead to urinary decomposition and cystitis. Such cases demand regular catheterization and irrigation. The power of the bladder may sometimes be improved by galvanism, one electrode being applied over the pubic region and the other on the perinæum. Bilbao succeeded in relieving the urinary incontinence by daily purgative doses of *Senna*. Although the bladder symptoms are dependent upon organic spinal disease, it is well to note they may disappear entirely, and even remain absent for a number of years.

The **optic nerve atrophy** resists all attempts at treatment. Slowly but surely the case progresses to complete blindness. As remedies, we may try *Argentum nitricum*, *Aurum muriaticum*, *Kali hydriodicum*, and *Plumbum*, but we cannot promise any results.

The **perforating ulcer** must be treated on sound surgical principles, rest, cleanliness and free drainage. One great obstacle to the healing of these ulcers has been the existence of a small sinus, and another has been the presence of a surrounding ridge of thickened skin. Sinuses must be opened; and the thickened and unhealthy skin pared away. The Bier treatment by passive congestion, though not yet employed by any one in this trouble, suggests itself to me as both rational and promising.

The **tubetic arthropathy** is very resistant to treatment. *Potassium iodide* is sometimes useful. Auxiliary treatment includes rest of the joint, strapping, and surgical operation when tissues break down. Again, I must express myself as favoring the trial of the Bier treatment.

Systematic exercises, as first advocated by Fränkel, constitute the most important addition to the therapy of ataxia in recent years. As outlined by Fränkel, the exercises are unnecessarily complicated, and place the treatment beyond the scope of the general practitioner. As a matter of fact, proper exercises can be devised by any ingenious physician, and can be practiced by the patient under his supervision. Those who are interested can consult Fränkel's work,* from which they can obtain many invaluable hints. The central idea of the treatment is that voluntary control of the various muscles can be improved by systematic movements of the affected parts. Patients coming to the sanitarium are first made to undergo movements of a simple character. Having mastered these, others calling for a higher power of co-ordination become the next task. The exercises are practiced in standing, sitting, and lying postures. First, but one foot or leg undergoes the educational procedures. Later, the legs are taught the work simultaneously. My reader will perceive that in a sanitarium many elaborate apparatus will be devised; but they are of advantage mainly because they impress and interest the patient.

Suggestions for home exercising are the following: Let the patient buy a piece of oil cloth having a simple pattern, and direct him, while sitting on a chair, to trace out the lines of the pattern with the tip of the great toe of one foot. This done, he repeats the manœuvre with the other foot. Mastering these, he can attempt to trace out the lines with both feet simultaneously. As soon as he manages these tasks satisfactorily, he may try a more complicated pattern in the same way.

Certain marks may be placed on the floor at irregular intervals, but

* *The Treatment of Tubetic Ataxia by Means of Systematic Exercise*. Published by P. Blakiston's Son & Co.

always within easy stepping distance of each other. Direct the patient to step from one mark to the other.

Direct the patient to walk along straight and curved lines drawn on the floor.

With the patient in a lying position, have him endeavor to put his foot through a hoop swinging from the ceiling. Later, two hoops may be supplied, and the patient endeavors to place one foot in each simultaneously.

And so I might go on indefinitely mentioning different movements. The physician who has a case of tabes under his care permanently will do well to secure additional ideas from Fränkel's work.

The exercises should be practiced eight or ten times daily, usually for periods of about five minutes each. Care must be observed that the patient is not tired by his efforts. For a time, at least, he should exercise in the physician's presence. After he has mastered the object of the treatment, he need only report progress as to past exercises, and receive instructions as to new ones.

I have seen cases of locomotor ataxia in which it has been asserted by the patient that the Fränkel movements were useless. In each instance, I found that the patient possessed very inadequate ideas of the system, and had undertaken the training under the guidance of some lay humbug. It has not been untruthfully stated that most men think themselves omniscient in medicine, politics, and religion. The ataxic belongs to this majority, and is usually made to suffer for his self-assumed wisdom.

The **diet** in locomotor ataxia is not a matter of great importance beyond the fact that the patient should eat in accordance with his inactive life, and not go to "diet fads." Good mixed diet, well-cooked, and slowly eaten, is the dietetic health trinity.

Alcoholic beverages are of no use, and may do harm; hence, they should be forbidden. There is no objection to tobacco in moderation.

Ataxia patients are very susceptible to changes of temperature. Hence, care should be taken lest they expose themselves unnecessarily to extremes of heat and cold. When their financial condition will permit, and it is safe for them to go from the immediate care of their physicians, they may change their abodes with the seasons. In the majority of cases this advice is entirely impracticable; in fact, it may be called a therapeutic luxury. With proper discretion, ataxics can live at home, follow their former avocations, and remain under competent medical supervision with distinct advantage. Needless to say, they should not be converted into hot-house plants by keeping their rooms unnaturally warm.

Massage may be prescribed when financial conditions will permit; but it must not be expected to be a wonderful success. It aids the patient's general nutrition—only that and nothing more. It has no specific relationship to the disease.

Of the *hydriatric measures* useful in ataxia, the prolonged warm bath is the most satisfactory. Extremely hot or cold baths do harm, and hasten the progress of the disease. The Turkish bath must be forbidden. A spinal douche, at a temperature starting at 90° and ranging eventually down to 75° F. or 80° F., and always projected with some force, has been found to improve the spinal nutrition. The baths should be of but ten seconds' duration.

The suspension treatment is now known to have been a therapeutic folly; of it, the less said the better.

Argentum nitricum is our standard remedy for locomotor ataxia, and should be administered with regularity in all cases in which clear indications for other remedies are not found. It produces all the cardinal symptoms of the disease, thus: Ataxic gait, with aggravation when the eyes are closed; atrophy of the optic nerve; contracted, dilated or unequal pupils; loss of pupillary reflexes; gastralgic attacks; retention of urine from paralysis of the bladder; complete loss of all sexual desire; priapism; shooting pains. It is interesting to note that this use of Nitrate of Silver is not confined to our school. Wunderlich long ago recommended it, and it has been a standard ataxic remedy among allopathic physicians ever since. Its homœopathic employment antedated Wunderlich by many years. *Pro-targol* given in doses of three grains three times daily for nine months greatly benefited one case.

Zincum is likewise employed by both schools of practice. Its homœopathicity is unquestionable. Many years ago a series of cases of nervous disease attacking the workmen of the mines of Upper Silesia was reported by Schlochow. The disease only attacked those who had worked in the mines for a number of years or more. There were marked inco-ordination of gait and anæsthesia of the lower extremities. *Zincum* is especially indicated when the numbness and formication of the lower extremities are pronounced; also when there are burning along the spine, pain over the dorsal vertebra, and other symptoms indicative of spinal irritation. Sexual power is generally lost.

Zincum phosphide is used more by old-school physicians than by ourselves. The combination of Phosphorus with Zinc certainly ought to make a very valuable spinal remedy.

Alumina has the ptosis and diplopia so frequently met with in the earlier stages of the affection; the patient is unable to walk in the dark without staggering; the soles of the feet as if padded; there is formication in the back and in the extremities; the nates go to sleep when sitting; the heels become numb with walking; and there is pain in the back as if a red-hot iron had been thrust into the spine. With Aluminium metallicum Bœnninghausen relieved four cases of locomotor ataxia which presented the above symptoms and also the following: Frequent dizziness; feeling in the face

as if cobwebs were on it. The characteristic Alumina constipation is also present.

Phosphorus is still another remedy employed by both schools of medicine. It is especially indicated in erethistic cases. Burning along the spine and in the affected extremities with formication is a prominent symptom. Extreme sexual excitement is present. When atrophy of the optic nerve is present it is associated with flashes of light.

Picric acid is probably limited in its usefulness to cases in which inordinate sexual desire is present, and in the early stages. Marked asthenia is present.

Belladonna will be of value in some cases of lightning pain. It is indicated by reason of the suddenness of onset, and suddenness of disappearance of this symptom.

Berberis will be of value in the nephritic crisis.

Nitric acid will relieve the lightning pains when they are of a sticking character, and in syphilitic constitutions.

Iodide of potassium will be of great help in the very early stages of syphilitic cases, when paralysis of single cranial nerves is present. It should then be given in large doses and persistently. There is a growing conviction that many cases of tabes which deny syphilitic infection are due to parental syphilis. This being the case, it is a wise plan to give the patient the benefit of the doubt and order a course of Potassium iodide. Another class of cases, which are probably more common than most physicians imagine, are those characterized by sudden or rapid appearance of paralytic manifestations, as paraplegia, ptosis, diplopia, cystoplegia, etc. These cases should be ordered to bed, and receive liberal doses of Potassium iodide.

Secale has produced all the classical symptoms of locomotor ataxia as shown in the report of Tuzek concerning an epidemic of ergotism in Marburg a number of years ago. It is largely used by the old school because of its influence over the vascular system. It has not been much used by the homœopaths, notwithstanding its evident homœopathicity.

Æsculus, *Causticum*, *Colchicum*, *Fluoric acid*, *Gelsemium*, *Kali bromatum*, *Nux vomica*, *Physostigma*, *Rhus*, *Stramonium* and *Sulphur* should also be studied.

Ataxic Paraplegia.

This is far more serious a condition than is locomotor ataxia. It runs a more rapid course, and is more resistant to treatment. The treatment of ataxic paraplegia (combined sclerosis of the spinal cord) is practically the same as that outlined for locomotor ataxia. Many cases are greatly ameliorated by a prolonged course of electrical treatment.

Spastic Paraplegia.

Spastic paraplegia, or sclerosis of the lateral columns, presents a very unfavorable prognosis. The disease is incurable, but runs a prolonged course. Careful medical supervision may delay the period of complete disability. Rest is a very important element in the treatment. The patient may undergo short periods of rest in bed, as recommended in the article on locomotor ataxia; or he may remain in bed for a few hours during the middle of each day. He should be especially cautioned against the danger of over-exertion. Such exercise as does not tire, and gives pleasure or satisfaction, may be permitted. If the patient is restricted too much he may become morbid.

Massage is an important measure, as by it we may relieve to a considerable extent the muscular rigidities. To secure the best results, the muscles should be massaged while in a tense condition.

Electricity should not be employed, as galvanism is useless and faradism harmful.

As to remedies, *Lathyrus*, *Argentum nitricum*, *Phosphorus*, *Zincum*, *Nux vomica*, and *Strychnia*, may be studied as having pathogenetic relations to the phenomena of the disease.

Aside from the disability, the patient's greatest discomfort comes from twitchings of muscles. As a rule, these may be relieved by the applications of hot-water bags to the spinal column or by hot baths. When these hydiatric measures and ordinary remedies fail, bromides in full doses may be tried.

Friedreich's Ataxia.

Friedreich's ataxia being a developmental disease offers absolutely no hope of recovery. The treatment should be conducted on the general principles advocated in the article on locomotor ataxia. Fränkel's system of exercising or education of muscles should be tried systematically. Owing to the tender years of the patients, this system should be under the care of an experienced nurse or attendant whenever the family finances will permit.

Ladame thinks he has seen considerable benefit follow the application of galvanism to the spine three times weekly. The electrodes should be large ones, and the strength of the current from ten to fourteen milliamperes. The treatment must be kept up uninterruptedly, excepting for short intermissions, for several years.

The attendant spinal curvature may or may not be treated by jackets or supports, according to indications. As a rule, the deformity is progressive, but the patients find considerable relief from supports.

The disease being likely to occur in several members of a family, parents should be warned of the possible disability of future offspring.

Hereditary Cerebellar Ataxia.

The treatment of this disease must be conducted on the same lines as those mapped out for Friedreich's disease. The condition is a more serious one, however, as disabilities are greater; hence, supervision must be more closely applied.

Amyotrophic Lateral Sclerosis.

Treatment of this disease avails us but little. The most efficient agent is massage, which must be practiced with the idea of alleviating the muscular rigidities and lessening the atrophies in their onward progress. Care must be taken that the patient does not injure himself by over-exertion. Periods of systematic rest do not appear to have the benefit follow them observed in connection with other diseases of the spinal cord.

In the terminal period of the disease, we have the symptoms of bulbar paralysis, which should be treated according to the directions given on page 858.

Remedies acting on the anterior cornua and the pyramidal tracts are the ones which should be prescribed. They are *Arsenicum*, *Strychnia*, *Plumbum*, *Lathyrus*, *Picric acid*, *Argentum nitricum*, and *Sulphur*. *Strychnia* should never be used in large doses, as it will readily aggravate the existing symptoms, especially the rigidity.

Syringomyelia.

Treatment cannot be directed against the pathological process in this disease with the slightest chance of success. We are obliged, therefore, to rest satisfied with combating symptoms as they arise. In our great desire to help the patient we should not waste our efforts on remedies that are irrational, especially if such drugs are liable to unpleasant or undesirable after-effects. Counter-irritation of all kinds is therefore positively contra-indicated.

The muscular atrophies, the paralyses, and the anæsthesias are to be treated according to general principles.

Syringomyelia is accompanied by numerous lesions, such as abscesses, arthropathies, etc., which are best treated according to surgical principles. The fact that they are dependent upon a spinal cord lesion should not militate against the knife or mechanical treatment. Necessarily, the prognosis is more unfavorable than in similar lesions occurring as idiopathic affections.

In the management of the patient it must be remembered that not feeling the effects of heat he may be readily burned by too hot applications.

It is hard to credit reports of remarkable improvements or cures of patients with syringomyelia, and yet Baujard and Lhermitte * claim that

* *Semaine Médicale*, No. 16, 1907.

the X-ray has totally transformed the prognosis of this disease. Ten cases are now reported in literature. The rays are applied to the spine and medulla oblongata. Motor disturbances subside first, trophic phenomena of the skin and bones are arrested, and sensibility returns to the skin. Study of the sensory disturbances will indicate the exact regions in the spine that require treatment, although the adjacent healthy regions should be included.

Caisson Disease.

The treatment of caisson disease should be the prophylactic. Those unaccustomed to caisson work should gradually accustom themselves to the increased atmospheric pressure, and observe care not to remain too long exposed when first engaged in the work. They should, moreover, see to it that their return to normal atmospheric pressure is made by degrees. In "coming out" it is believed to be safe practice to allow five minutes in each lock for each atmosphere of pressure.

When the first signs of the disease develop, it is good practice to return the patient to the caisson or to a specially devised chamber containing air under pressure. Then the air pressure can be reduced gradually until it has reached the normal, when the patient can be taken out.

When it is not possible to adopt the above expedients, the extremities may be bandaged with an Esmarch bandage, which will drive the blood to the internal cavities. This expedient has given good results.

The severe suffering, even in cases of short duration, calls for palliation at times; Morphia hypodermically being the most available analgesic. Pains in the extremities may be relieved by immersion of the parts in hot water. Jaminer found the administration of alcohol with ginger of great use for the epigastric pains. It has been found that the partaking of food before entering the caisson is a very important preventive of accident. On coming to the surface, workmen should invariably rest for a short time; *above all things, they should not think of making any undue exertion.* Return to the caisson has been recommended as a preventive of further trouble on the advent of the initial symptoms. Severe cases call for the same treatment as recommended for myelitis. As to remedies, *Arnica*, *Belladonna*, *Bryonia*, *Rhus*, *Nux vomica*, and *Causticum*, are the most frequently indicated.

The Muscular Atrophies.

The muscular atrophies include chronic poliomyelitis anterior and the muscular dystrophies. The latter, in turn, include the types known as Erb's juvenile muscular atrophy, the Landouzy-Dejerine type, the peroneal type of Charcot, Marie, and Tooth, and pseudo-hypertrophic paralysis.

Progressive Muscular Atrophy.

In many cases of chronic progressive muscular atrophy or **chronic poliomyelitis**, mild methodical exercises in the open air constitutes the most important therapeutic factor. But the instruction to have the patient exercise must be carried out with discretion, for there is no doubt that excessive exertion is harmful. It is, therefore, important that the patient be watched carefully, and the effects of exertion of all kinds carefully noted.

All measures which tend to raise the standard of nutrition, as fresh air and good nourishing food, must also be enjoined.

Electricity is an important agent also. It is to be employed centrally to the spine, and locally to the atrophying muscles. The galvanic current may be applied directly to the spine, the positive electrode over the cervical enlargement, and the negative to the lumbar region; or the plan suggested by Erb may be pursued. He advises the application of galvanism to both the spinal cord and the sympathetic. "His method is to commence with the anode to the cervical spine and the cathode to the cervical sympathetic, followed by the cathode to the spine, and the anode to the sternum, the lumbar enlargement, or the peripheral nerves. He insists especially upon the importance of the action of both poles being brought to bear successively upon the affected regions of the cord. Finally, the affected muscles are to be galvanized or faradized, the indifferent electrode being at the nape of the neck. The current should be moderately strong, but too vigorous treatment is not advisable." As to peripheral applications, the best results are to be obtained by the interrupted galvanic current. The strength should be just such as to produce muscular contractions. Duchenne is a firm believer in the efficiency of faradism. His instructions are as follows: "(1) To pass the moistened electrodes over the surface of each of the affected muscles, keeping them close together, and using a current of low intensity (primary current). (2) To stimulate the muscles moderately, and with a current which is not interrupted very frequently. (3) To treat only the muscles which react to faradism, and to pay most attention to the most important muscles, and to terminate the sitting by a mild faradization of any muscles which may be threatened with an invasion of disease."

Gowers praises very highly the hypodermic administration of Strychnia, claiming that the course of the disease is generally stopped within one month after the commencement of the treatment.

The Nitrate of Strychnia is the most convenient preparation. One hypodermic administration is made daily. The initial dose is one one-hundredth of a grain rapidly increased until finally one-fortieth of a grain is given.

Plumbum is perfectly homœopathic to progressive muscular atrophy,

and has achieved favorable results in a number of cases. *Argentum nitricum* likewise is capable of producing good results by reason of its beneficial influence over spinal degenerations generally.

Phosphorus, Arsenic, Arnica, Mercurius, Gelsemium, Physostigma, Sulphur, Baryta, and Cuprum may also be studied in this connection.

Muscular Dystrophies.

In outlining a course of treatment, one must be guided largely by theoretical considerations. Prophylaxis is the essential feature. The markedly hereditary character of the ailment makes it incumbent upon members of affected families to refrain from marriage. If this advice is disregarded, they should at least have the good sense not to procreate. It is the height of selfishness to bring beings into the world to lead lives of invalidism. In a general way, most careful attention should be paid to all the details that make up a hygienic course of living. When once the disease has appeared, treatment should, in the present knowledge of the subject, be conducted on purely general principles; mild massage and gymnastics, and the administration of such remedies as seem to be called for from time to time by existing conditions.

Mild systematic exercises enjoy greater confidence than any of the other remedies thus far suggested.

Many cases are attended by deformities, for which orthopædic apparatus and tenotomies have been recommended on theoretical grounds. I make use of the word "theoretical" advisedly, for there is every reason for believing that tenotomies more often than otherwise fail of their purpose, and the deformities are very often nature's method of bringing about a compensatory attitude, by reason of which the patient can get about more readily in his disabled condition.

The muscular dystrophies being developmental diseases, but little can be said in the way of remedies. Those which have a clinical relationship to muscular atrophy may be tried, though I believe better results will be attained by attention to symptomatic indications as they arise.

Pseudo-Hypertrophic Paralysis.

Little if anything can be expected from electricity; indeed, some authorities go to the extent of pronouncing this latter agent injurious in pseudo-hypertrophic paralysis. Massage, on the other hand, is praised by all. It must not be pursued too energetically, however. The manipulations should be just sufficient to excite a beneficial hyperæmia of the weakened muscles. Supplementary to massage is systematic but gentle exercise, which must tend to preserve muscular nutrition, and at least lessen the rapidity of progress of the pathological process.

As in the case of the muscular dystrophies already mentioned, little

can be expected from the action of medicines. Theoretical considerations and practical experience have given us some hints which may have some value. Owing to their well-known influence over fatty degenerations and connective-tissue overgrowths, *Potassium iodide* and the preparations of *Gold* are suggested as the most available remedies. Their dosage need not be limited to the minute or infinitesimal, however. The former drug may be given in doses of from fifteen to thirty grains daily, and kept up for months or years. The latter may be administered either as a *muriate*, or as the *double chloride of gold and sodium*. *Phosphorus* should likewise be a valuable remedy. Indeed, Dr. J. Galley Blackley reports one case in which this remedy did very good work. The same author also reports a case in which *Lathyrus* effected an improvement which, however, was but temporary.

Tumors of the Spinal Cord.

With the exception of syphilitic cases, tumors of the spinal cord are amenable to surgery only. In view of the possibility of any given case having a syphilitic origin, it is a good plan in all cases admitting of doubt to try the effects of anti-syphilitic treatment. But this course should not be pursued over too long a period, because, in the meantime, the growth is destroying the spinal cord by pressure.

As soon as the tumor and its location are diagnosed with reasonable certainty, the operation should be performed. Of course, it involves considerable danger from shock, though not as great as in cases of cerebral tumor. Secondary growths should never be subjected to operation, as they are hopeless. The various benign tumors occurring within the spinal canal offer a remarkably favorable prognosis if their removal is undertaken before they have produced destructive changes in the cord itself.

As to the possibility of error in localization, it has been the usual experience to find that the tumor is located at a somewhat higher level than diagnosticated.

The chief danger incidental to the operation is hæmorrhage from the large veins in the muscles of the back and in the bones. The bleeding can be controlled only by pressure.

Should operation be refused or deemed inadvisable, the treatment must be conducted on purely symptomatic indications, the patient to be made comfortable at all hazards.

Spinal Hæmorrhage.

This may be studied under two headings, namely, meningeal and intramedullary hæmorrhage. **Meningeal hæmorrhage** is recognized by the cardinal symptom of an interval of freedom from symptoms between the reception of the injury and the onset of paralysis. Such cases are very likely to be progressive, and if active measures are not taken may end

fatally. They are, therefore, fit subjects for operation, although laminectomy should not be performed until the original shock of the accident has passed off. Fortunately, it is just in this class of cases that primary shock is absent. The traumatism is apparently slight; indeed, the patient not infrequently gets up and goes about for a number of minutes before there is any evidence that he has been severely hurt. If, therefore, shock comes from the accident it is from the continued bleeding and not from the original blow. I am therefore in favor of immediate operation in these cases.

With **hæmatomyelia** or **intramedullary hæmorrhage** the case is different. Usually primary shock is profound, and there are associated fracture and dislocation of the vertebræ with compression.

Other than the above, the treatment of spinal hæmorrhage is identical with that recommended for acute myelitis.

Idiopathic hæmorrhage, which is rare, must be treated medically. The remedies to be borne in mind as useful are *Aconite*, *Hamamelis*, *Veratrum viride*, and *Arnica*.

CHAPTER XXIII.

DISEASES OF THE PERIPHERAL NERVES.

Neuritis.

(*Multiple neuritis; Beri-beri.*)

THE first essential in the treatment of neuritis is rest. If the inflammation is general the patient must be confined to bed, no matter how mild the symptoms or loss of function may be. If the lesion is local then the affected parts must be rested completely. Splints must be applied if the necessary rest cannot be secured in any other manner. It is the duty of the physician to give the patient to understand distinctly that any exercise or movement, even the slightest, in any case of neuritis, isolated or multiple, is injurious to his welfare; to comfort, when isolated nerves are inflamed; to comfort and life, when the disease is multiple. The patient should not be permitted to perform such simple movements as those involved in the acts of dressing or feeding himself. When confinement in bed is indicated, he should be compelled to use the bed-pan.

Great care should be exercised in determining the cause of the trouble, for if this is allowed to remain active, recovery need not be expected. Alcoholic cases require absolute removal of all alcoholic beverages, excepting when the patient is so debilitated as to make the sudden withdrawal of the accustomed stimulus unsafe. Even in these it is wiser to give some medicinal stimulant in place of the alcohol; those most highly recommended being *Ammonium carbonate*, *Strophanthus*, *Caffeine*, *Camphor* and *Strychnia*. Especially are the cardiac stimulants necessary in cases in which it is evident that we have an involvement of the pneumogastric, as in the multiple neuritis sequential to the infectious diseases. The etiological factor is readily determined in the infectious group of cases. Indeed, there are usually warning symptoms to suggest the appearance of the nerve complication. Such cases demand prophylactic treatment, which usually consists in absolute mental and physical rest, and elimination by the free administration of water by the mouth, hypodermically, or by the rectum. There is no doubt if the earliest symptoms of post-infectious neuritis were recognized much suffering could be averted.

The majority of the alcoholic cases occur in women, and the cause is usually discovered with difficulty. The patient, as a rule, indignantly denies addiction to drink. The physician is, therefore, obliged to fall back upon the information given him by the nurse, for the watchful eye of an

efficient and tactful nurse is essential. The cases dependent upon metallic poison are scarcely less difficult of recognition, because patients are unaware of exposure to the toxic agent.

In simple neuritis the diet is a subordinate matter, excepting in cases arising from gout and auto-intoxication. Then it should be plain and unstimulating. In the majority of cases of multiple neuritis the patient is greatly debilitated, and it is necessary to force nutrition. The method for doing this must be varied according to indications. In the more severe cases, koumyss, peptonized milk, beef tea and other easily digested and nourishing articles should be given in small quantities and at short intervals. If the stomach rejects food, it should be given by the rectum. Sometimes the use of red pepper in the beef tea, as in alcoholic cases, is beneficial. If the patient is unable to swallow, the feeding must be performed through the stomach tube. Care must be exercised in the passing of the tube, as it is more likely to enter the larynx than in persons who have no paralytic disturbance. With moderately severe cases the diet may be more generous, and such nutritious articles as eggs, plain milk, cereals, fish, chicken, and easily digested fats permitted. Alcoholic drinks should not be prescribed in any cases, excepting in those following the acute infections. Even in them, undue indulgence may aggravate the trouble for which it is given. In this connection, I may interpolate a remark bearing upon the prevention of multiple neuritis after typhoid fever. Some physicians are accustomed to prescribing alcohol quite freely for the post-typhoid exhaustion, and, I believe, without good reason. Many of these are careless in their directions, and nurses and attendants administer quantities beyond the bounds of all reason. Sometimes the alcoholic beverage is given in addition to some proprietary preparation itself rich in alcohol. As I write, I am reminded of a case of typhoid fever which I saw yesterday, and for which had been prescribed a patented food in such quantities as to give the patient no less than eight ounces of alcohol daily.

All cases of neuritis should be examined with a view to their possible diabetic origin. The dietetic treatment under these circumstances is obvious (*vide* section on *Diabetes mellitus*).

In isolated neuritis, locally-acting causes must be sought. When discovered, it is astonishing to note their simplicity and how readily their discontinuance stops all symptoms.

For the relief of pain, hot or cold applications, according to the peculiarities of the case, should be employed in preference to analgesics. As a rule, heat is the most acceptable to the patient, and may be applied by hot cloths, hot-water bags, or the Japanese hot-box. I most certainly prefer the latter, when the heat is to be localized upon a small area, and the weight of the hot-water bag is objectionable. In the use of hot applications one must bear in mind the anæsthesia and the danger resulting from making them of too high a temperature.

Some cases reject heat as unbearable or as apparently injurious, and obtain benefit from ice-cold applications. Probably the best means of applying cold will be found in the use of a tin box, one side of which is so formed as to take the shape of the affected limb. When these measures and remedies fail to give the desired relief, then and then only should palliative medication be sought.

Of the analgesics, Morphia is certainly the most reliable, especially when administered hypodermically. It is unquestionably the only remedy permissible in those cases in which we have reason to fear cardiac paralysis. If, under such circumstances, the physician is fearful of the Morphia depressing the heart—a fear which I regard as groundless—he may mask such depressing (?) effects by the simultaneous administration of Strychnia. The great objection to the use of Morphia is the danger of inducing a drug habit—not an idle fear when one bears in mind the long duration of many cases of neuritis. For this reason, I much prefer the coal-tar derivatives, especially Acetanilid, in doses of five to ten grains repeated with due caution, and only when absolutely necessary. Under no circumstances would I advise its use without most careful attention to its effects on the heart, nor would I ever resort to maximum dosage without first determining the patient's susceptibilities to smaller doses. *Methylene blue* (medicinal) is an efficient analgesic in some cases. Its use is unattended by any danger, and it does not require frequent repetition. Three grains once daily is sufficient. Larger or more frequent doses are likely to produce irritability of the bladder, especially in men. This drug should always be given in capsule or pill form—never in solution or powder.

Electricity is a most useful adjuvant; but it is greatly abused. Under no circumstances should it be prescribed when the disease is still active or progressive. It is contra-indicated when the affected parts are still sensitive to manipulation, and when the applications produce pain or are followed by aggravation of the symptoms.

The faradic current is valueless, if not harmful, as it interferes with rest of the parts. The proper method consists in the use of galvanism, a mild current without interruptions, for about five or ten minutes daily. The positive electrode should be applied over the seat of greatest pain, and the negative over the spinal origin of the nerve affected, or to the periphery of the extremity, hand or foot, as the case may be. The current should be gradually increased and gradually diminished, carefully avoiding any shocks or interruptions. It is unwise to resort to electricity early in the course of multiple neuritis.

If in paralysis the prominent symptoms and pains are absent or slight the current should be interrupted, and that one employed which will give the most energetic muscular contractions. This stimulating treatment must not be overdone. It is sufficient to excite three or four contractions

of each of the affected muscles at each seance. The treatments should be daily, if possible; but never less frequently than alternate days. The anæsthesia attendant upon neuritis and nerve injuries is best treated by daily applications of the faradic brush.

Massage vies with electricity as a measure to prevent atrophy of the paralyzed muscles. It must be employed judiciously. The violent movements performed under the guise of osteopathy are capable of doing harm. The massage should be administered by a professional masseur. To rely upon the well-meant though misdirected efforts of the relatives and friends of the patient is the means of losing much valuable time. If the patient's means will not permit the employment of a masseur, some one of the family can receive instruction as to the treatment of that particular case in a few lessons; but a competent instructor should do the teaching.

Beri-beri requires in most instances a change in the diet, and always, when possible, the removal of the patient to a non-infected district. This in many cases is followed by rapid improvement of the symptoms.

For traumatic cases, *Arnica* and *Hypericum* are the leading remedies. The former is the better in cases in which the lesion is a bruise or compression; the latter when from a laceration or a wound.

Rheumatic neuritis, indeed, most cases of perineuritis and adventitial neuritis, find their most frequently indicated remedy in *Rhus tox.* This remedy is especially useful in the subacute and chronic cases. I prefer the administration of the first decimal dilution, one drop every two or three hours. I do not consider that I have obtained very good results from the dry preparations of this remedy.

Aspirin and the *Salicylates* are also useful in the rheumatic cases. Aspirin is preferable because it is less liable to disorder the stomach than is the Salicylate of soda. It should be given in doses of ten grains three or four times daily, always followed by half a glass of water.

Some cases, especially those in older people, yield very nicely to *Potassium iodide* in small doses, *i. e.*, five grains well diluted three times daily after meals.

Acute cases require *Aconite* or *Ferrum phos.*, according to the character of the inflammation. *Aconite* is preferable when the numbness is a prominent feature, and when the trouble has arisen from exposure to cold.

For the severe cases in which pains are atrocious, no remedy is better indicated than *Belladonna*, although when these are of a severe burning character, and motor paralysis is pronounced, *Arsenicum* is also invaluable.

In multiple neuritis following acute infectious diseases, one can rely mainly on *Gelsemium*, *Argentum nitricum*, *Causticum*, and *Rhus*. I prefer the former two in the majority of cases; the *Gelsemium* in the paralytic, and the *Argentum nitricum* in those of ataxic type. *Bisulphide of Carbon* may be suggested as of possible use in the latter cases.

In the alcoholic cases I prefer *Nux vomica* 1x. If the active symptoms have subsided, and prostration is profound, *Strychnia* 2x. O'Connor relies mainly upon *Cimicifuga* in these cases. His indications for the remedy are: Aching pains in the limbs, which the patient likens to a toothache, and the use of alcohol in any form as a causal factor. He gives one drop of the tincture to four ounces of water, in teaspoonful doses, repeated every few hours.

Arsenicum is probably the remedy best adapted to the treatment of severe forms of multiple neuritis.

In the atrophic stage of all forms of neuritis, *Plumbum* is the best remedy.

Rhus and *Causticum* are suggested in paralytic cases with the subsidence of all inflammatory symptoms.

Phosphorus is well adapted to cases of degenerative neuritis. It may be given either in dilutions of the pure substance or in triturations of Phosphide of zinc.

Kenneth McLeod has proposed and put in practice in eight cases the longitudinal section of nerves affected with interstitial inflammation, leprous and otherwise. Two of these cases were promptly cured; four were greatly benefited, and in two the treatment was a failure. These results are very good when the obstinate nature of the malady is considered.

Surgical Treatment for Nerve Injuries.—In all cases of severed nerves it is good practice to carefully unite the ends, as good results are the rule. The operations that have been sanctioned include the making of flaps before uniting the ends; the insertion of the nerve ends in decalcified bone, which serves to direct the regenerating fibres properly. When a nerve has been lacerated by fracture of a bone it is generally sufficient to apply splints after reducing the fragments. Sometimes, however, this fails, either because of the too great separation of the nerve endings or the formation of callous. All such cases should be operated, if at the end of six weeks of proper treatment there is no return of function. In cases in which operation has been neglected, and have gone on without improvement for many months or even two or three years, surgical intervention is not infrequently successful; hence, delay should not be a contra-indication to nerve suture.

Trophic symptoms sometimes follow neuritis and nerve injuries. These are best treated on general principles, generally by unirritating antiseptic applications.

Neuromata.

Medical treatment can do but little, excepting in the syphilitic varieties. Excision of the growth is only advisable when it produces symptoms, or is of a malignant character. Due consideration must be given the functions of the nerve in deciding as to the advisability of an operation.

Thus, it would never do to excise a neuroma which gave but little discomfort, if the removal thereof is likely to produce a permanent loss of power in the muscles supplied by the resected nerve. If, on the other hand, suffering is great, and loss of function is much impaired, it is reasonable to believe that the symptoms will become more marked as the lesion progresses. Operation is then necessary.

Neuralgia.

Strictly speaking, the term neuralgia is a very unfortunate one from a pathological standpoint. Clinically, it is a convenient one, because it gives the conception of "nerve pain" without any assignable organic cause as its foundation. By organic cause is meant anatomical alterations in the nerve structures or in the tissues adjacent thereto.

The etiology of the class of cases coming under the head of neuralgia bears a very important relationship to matters of prophylaxis; hence, they must be considered at this time. It has been said that "neuralgia is the prayer of the system for food;" and this saying has a very important bearing in the treatment of that large class of cases which occur in association with anæmia, overwork, prolonged lactation, indigestion, underfeeding, improperly selected food, etc. Another class of cases originate in toxic agencies, of which gout, rheumatism, malaria, diabetes, intestinal auto-intoxication are the most important. Underlying these exciting or determining causes is the constitutional state, which in nearly every case is highly neurotic. This leads to the production of attacks on exposure to cold, undue excitement, worry, etc.

The successful treatment of neuralgia then requires not only a careful study of the neuralgia itself, but also of the associated condition. The latter in many instances, if not in nearly all, furnishes the most important indications for treatment, both hygienically and medicinally. In every case the cause of the disease must be sought and removed. The general standard of health must be raised to the highest possible. Good food, fresh air, and mental and physical rest are necessary in many cases. Sometimes it is important that the patient be sent away from home for a more or less protracted period. The diet of neuralgic patients must not be prescribed on an empirical basis. Anæmic and neurotic cases require liberal feeding, the main portion of the food being of a fatty and animal nature. If the patient cannot partake of fat food, then it should be supplied in the shape of Cod liver oil. Lithæmic patients require abstinence from meat, and free indulgence in pure water. Cases dependent upon diabetes or renal disease require the management indicated by these troubles.

Rest of body and mind is of the highest importance, especially in the overworked and the troubled. Mental rest is to be secured by diversion of the mind to other than the subjects over which it is usually occupied,

and is always a difficult matter to secure. Physical rest should be graded according to the case. Some cases are best treated by absolute rest in bed for a protracted period; others require simply a daily rest of an hour or two.

For the relief of the pains during the paroxysms, the best palliative in many cases is dry heat. This may be applied by means of the Japanese fire-box or the hot-water rubber bags, or hot hop-bags. These often fail to give the desired comfort, and other palliatives become advisable if not absolutely necessary, for long-continued pain is exhausting. Morphia should never be used excepting as a last resort, because of the danger of forming the Morphia habit. Above all things, the patient should never be intrusted with this drug, especially if it is to be administered hypodermically. If an analgesic is to be employed, it should be one of the much-abused Coal-tar preparations, Antipyrin, Phenacetin, or Acetanilid. These are all efficacious in pains about the head. Antipyrin is the most efficient in other pains, although Acetanilid is but little inferior to it, and probably safer. While thus speaking in praise of these drugs, I do not advocate their indiscriminate exhibition. If the physician understands their action and doses thoroughly, he need not fear evil results; but let him give them recklessly, and he exposes his patient to dangerous risks.

Electricity is very valuable in many cases. Galvanism is the preferable current. The positive electrode should be applied over the sensitive points, and the negative over the spinal column at the supposed origin of the affected nerves. The current should be free from interruptions and inequalities. Its strength will vary according to the sensibility of the affected part, all the way from five to thirty-five milliamperes.

The surgical treatment of neuralgia resolves itself into nerve stretching and nerve resection. Relapses are very common after both procedures, the latter generally affording the more permanent results. Still, stretching is often of service, and being a more conservative procedure, should be the operation of first resort.

The medicinal treatment of neuralgia is not easy to expound, because of the many collateral conditions to be considered as indications for drugs. The following suggestions are offered:

Actea racemosa is valuable in many cases of rheumatic origin, and also in cases occurring reflexly from utero-ovarian disease. The pains are of a sharp lancinating character. They are usually supraorbital or intercostal. Still, the pain may be referred to any of the peripheral nerves.

Belladonna is useful in quite a variety of neuralgic pains, characterized especially by their sudden onset, and the high degree of attendant congestion. The characteristic sensation is that of throbbing. The patient is mentally irritable. Hughes looks upon this remedy as limited in usefulness to recent cases.

Arsenicum enjoys a good reputation in both schools of medicine as an anti-neuralgic. In the first place, it is invaluable in neuralgias of malarial origin, especially when characterized by periodicity in recurrence. The pain usually affects one side of the face. The pains are worse towards night, reaching their climax at or after midnight. The patient is unusually restless. *Cedron* is another remedy for malarial neuralgia. The pain is supraorbital and is remarkable for the regularity of its occurrence.

Meserum is probably the best remedy for neuralgia reflex from decayed teeth. In these cases, the importance of referring the patient to the dentist for operative treatment must not be forgotten.

Other remedies to be considered are *Rhus*, *Bryonia*, *Colchicum*, *Chamomilla*, *Spigelia*, *Thuja*, *Colocynth*, *Phosphorus*, *Sepia*, *Cinchona*, *Aconite* and *Sulphur*.

Sciatica.

In the treatment of acute sciatica, *i. e.*, in sciatica of recent onset, the *sine qua non* is absolute rest in bed. The more acute the case, the more rapid the onset, the greater the necessity for such rest. There should be no compromising with the patient on this subject, for the great majority of cases of chronic and subacute sciatica with which one meets in practice are due to neglect of this important measure. When simple rest in bed fails to secure the absolute quiet necessary to success, the affected limb should be placed in a splint or between sandbags. The splint should be light in weight and of a kind capable of checking every motion at the hip and knee. The bandage keeping it in place should be of flannel, and extend from foot to groin, and applied with a moderate degree of pressure. This splint rest may, indeed often does, prove necessary in old and obstinate cases of sciatica, and in them two or three weeks are usually required before it should be permanently removed. But even then it is advisable to inculcate care on the part of the patient and keep him at partial rest for some time longer. It is also wise after the removal of the splint to have the bandage applied twice daily for a couple of weeks or more. In some cases which, as a rule, are not very severe, the bandage alone is sufficient.

To make the rest treatment fully efficient, attention to details is necessary. Care should be had as to the character of the mattress. The patient's coverings should be comfortable, neither permitting sweating from overheating or chilling from their inadequacy. The best position for the patient is on the back with the knee bent on the thigh and the latter on the body. When splint rest is prescribed, due cognizance must be taken of the comfort afforded by this position of the limb.

Hot or cold applications are often of value, both as palliatives of the pain and as actual curative agents. As a rule, we cannot say *a priori* which will do the most good, as we must be guided very largely by the results and by the feelings of the patient. Some patients thrive on heat, others

on cold. The majority of cases do better on the application of dry heat. The best medium for this is hot flannel bags filled with sand. We may sometimes use moist heat in the form of the "hot fomentation compress." This is made by wringing out pieces of flannel in hot water and applying them to the painful area. To prevent blistering of the skin the latter should be well anointed with some oily substance, as vaselin. The dressings should be renewed every twenty minutes for two hours, and this course should be repeated twice in the course of the twenty-four hours. Following the fomentations, the patient should be washed with water at a temperature of 75° and dry heat applied.

When the symptoms suggest that the sciatic pain is due to active inflammation, cold applications are unquestionably of great value. To be efficient, the low temperature must be maintained about the affected extremity for several days. To do this, the limb should be placed upon or against a suitably prepared tin box filled with ice. If the pain is localized to but a portion of the leg, the refrigeration should be limited to the painful or sensitive area. The plan of bandaging the affected limb from foot to groin as above suggested may also be used in conjunction with the refrigeration treatment. Chronic and persistent cases of sciatica sometimes make rapid and surprising recoveries on the discovery and removal of some simple cause. As examples of this, we have the numerous instances in which constipation has been the cause of the trouble and free purgation has given entire and permanent relief. One of my patient's had suffered many months from sciatica. Studying his habits carefully, I learned that he had invented a cane with an adjustable hand, which could be bent on the main stick and held in a "T" position. When talking with people on the street, he was accustomed to bear his weight or sit on this cross-piece. Stopping this habit cured his sciatica.

Massage is of great help in chronic cases; it is inadmissible in those of acute inflammatory origin. If the affected parts are sensitive to pressure, the manipulations should be very gentle at first and of short duration later; as the patient improves, they may be prolonged and more vigorous. The massage may be followed by resistance movements.

Electricity should be employed only when the active inflammatory stage of the disease has subsided. Galvanism is almost exclusively the form to be used. The current strength may be varied from eight or ten to twenty or thirty or more milliamperes. To secure the larger dosage, it is necessary that the electrodes should be quite large. The positive poles should be placed over the sensitive points in the course of the nerve, usually over the sacro-sciatic notch, and the negative over the lumbar spine. The current should be as smooth and as free from interruptions as possible. The sittings should be daily, and of from five to fifteen minutes' duration. Galvanism sometimes gives some wonderful results in the treat-

ment of old sciaticas. Static electricity is strongly advised by some electrotherapeutists. Careful analysis of the cases show, however, that it is less efficient than galvanism. There can be no doubt that in many instances its beneficial effects are due to its influence over the patient's mind.

Hydrotherapy is invaluable in many of the subacute and chronic cases. The hydriatric measure which has proven the most serviceable is the Scotch douche. Some patients cannot tolerate this treatment at first. Such individuals should be prepared for it by a few daily ablutions of water at from 60° to 65° F., followed by brisk friction. The temperature of the douche itself should range from 110° to 60° F. at first; later, the maximum temperature may be increased to 125°. The pressure of the water should be from twenty to twenty-five pounds, and the duration but little more than half a minute. This should be followed by a fan douche at a temperature of 60° F. over the entire body for five seconds, when the patient should be rubbed down well and permitted to dress and go out.

Although by no means new, the subcutaneous injections of air as a means of relieving certain painful manifestations, as proposed by Gubb*, deserves serious consideration in the treatment of sciatica and other painful affections. The treatment was first devised by Cordier with the idea of reducing pain by the production of elongation of the finer nerve ramifications where they leave the subcutaneous tissues to enter the derma proper in treating certain skin diseases. In this he was disappointed, but incidentally discovered a means of relieving painful manifestations, of which sciatica may be taken as the type.

"The procedure is simplicity itself. The pumping apparatus is supplied by an ordinary rubber bulb provided with an elastic reservoir such as is used for Paquelin's thermocautery, a length of rubber tubing in which is inserted a glass bulb filled with sterilized cotton, and an irido-platinum needle. The latter is sterilized just before use by heating in the flame of a spirit lamp. The fingers of the operator and the skin of the patient must, of course, also be sterilized. It is well to have an idea of the cubical capacity of the bulb in order to know how much air has been introduced.

"Having taken these preliminary precautions, the needle is plunged through the skin over the seat of the pain, then, after waiting a few minutes to see that no blood exudes, showing that the needle has not entered a bloodvessel, the insufflation is commenced. This should be done gently, very slight pressure being sufficient to overcome the elasticity of the skin. A rounded swelling forms around the seat of puncture, and when the air reaches a vascular or nervous sheath it rapidly spreads along it and secondary swellings form at a distance. These secondary ramifications are specially apt to form in the limbs, where the sheaths are more numerous.

* *British Medical Journal*, November 9, 1907, p. 1297.

The skin at first becomes blanched, but this soon gives place to a pronounced redness which persists for some hours. The air takes several days to undergo complete absorption, and under the influence of muscular contractions travels far and wide. No pain whatever is experienced, even when comparatively large quantities of air are injected, at most a sensation of distention, 'pins and needles' or pin-pricks.

"The needle having been withdrawn and the puncture sealed with a drop of Collodion, the next step is to massage the part. The subcutaneous air must be alternately dispersed and brought together again, especially over the painful spots. This massage is an indispensable part of the procedure, and must be conscientiously carried out; indeed, patients should be directed to repeat the process daily as long as any resonance remains.

"The procedure is applicable to the relief of pain due to all forms of neuralgia and neuritis. The only precaution is to vary the quantity of air according to the anatomical structure of the part. For instance, we may inject 200 or 300 c.cm. in the gluteal region, while over the thorax 10 to 30 c.cm. will be enough. In the neuralgic pain which follows extensive zona it is best to make several small injections, one over each painful spot.

"In the treatment of sciatica the injections should be made in the lumbar region, on the outer side of the thigh, and on the supero-external part of the leg, round about the head of the fibula, as well as over any painful spots in the lower part of the leg and the dorsum of the foot, to be followed in every instance by systematic massage."

The author has not applied the treatment to neuralgias of the face.

Counter-irritation over the course of the sciatic nerve may be prescribed in certain cases which resist all other measures. The best methods of administering it are by small cantharides blisters or point applications of the Paquelin cautery.

Of palliative remedies for the relief of the pain, the most important is *Acetanilid*, which may be given in doses of from five to ten grains, cautiously repeated, and that, too, only after knowing the idiosyncrasies of the patient. Very severe cases may find it necessary to use Morphia hypodermically. These, in my experience, are decidedly exceptional. As in all other painful affections, the danger of forming the Morphia habit must be borne in mind.

In acute cases, *Gelsemium* and *Aconite* are my favorite remedies. The former is applicable to cases presenting no special indications; the latter to cases arising from exposure to cold, and attended by prominent sensory symptoms, as tingling, etc.

Rhus is the best remedy for the subacute and chronic cases of rheumatic origin, especially when they have arisen from exposure to cold or dampness, or from over-exertion. The characteristic *Rhus* modality is generally present. I believe this remedy adapted to the majority of

chronic cases. Some few rheumatic cases do well under the administration of Salol, Salicin, Salicylic acid or the Salicylates. It must be remembered that these are exceptional.

Weber,* of Cologne, says when Rhus is indicated the disease originates in the ligaments and muscles, and expresses itself as a feeling of having been wrenched, stiffness of the joints—the limb feeling as if made of wood—a sensation of pressure, heaviness, fatigue, paralysis, and a sensation as if the limb had gone to sleep. Therefore, Rhus is indicated in rheumatic sciatica as well as in the pains in the joints after active, and especially, passive overstretching of the articular ligaments, as well as after severe exertions. The accumulated and stagnant metabolic products of the muscular fibrillæ form a painful and paralyzing substance which prevents the contraction of the muscles, so that a careful and continuous movement of the limb will restore the current in the lymphatic and relieve. The same must hold good with the ligaments, for they are painful when first beginning to move, and only functionate well after they have been used for a time. The external application of warmth also ameliorates by stimulating the depressed cutaneous activity.

Pulsatilla.—This remedy, which is highly recommended by Weber, will relieve that form of ischialgia which is due to stagnation of the blood-current which slowly courses upwards, which, thick, dark, and stagnant, fills the capillaries and veins to overflowing, and gives rise to a form which may be called venous sciatica. Therefore, the symptoms never reach any very great intensity, which has led to its being used in the milder forms of the disease. There is a sense of fatigue, heaviness, a sensation as if the leg had been bruised, with a drawing pain which makes the patient restless. Everything that increases the venous stagnation and the consequent swelling, aggravates. Hence, rest, pendant position of the leg, and standing aggravate the patient's condition. Exercise favors the upward movement of the blood-stream by the alternating contractions of the muscles, relieves the pressure upon the nerve-fibres, and hence gives relief. The external application of cold, also, has a similar action, for, by its constrictive action upon the cutaneous bloodvessels, it forces the blood into the deeper and larger bloodvessels, where the current moves more rapidly, thus relieving the cutaneous vessels, where the *vis a tergo* is small. Warmth, either of the room or bed, has the opposite action and therefore aggravates. The changing of the pains from place to place is due to stasis of the venous blood in various parts of the extremity.

Weber † also offers the following therapeutic suggestions :

Arsenic will be found indicated more by its characteristic midnight aggravation, the associated anxiousness, the striking sinking of strength

* *Zeitcher, des Berliner Vereines Homœop. Aerzte*, Bd. x, H. v. and vi.

† *Op. cit.*

when the pain comes on, as well as the sensation of a fiery stream passing through the nerve.

Arnica is to be preferred to *Rhus* when the disease is due to crushing, tearing, with effusion of blood in the region of the sciatic nerve, together with the characteristic symptoms of *Arnica* of restlessness, desire to move about, and over-sensibility.

Sepia is valuable where the slowness in the blood-current is due to plethora of the portal system.

Nux vomica presents, together with its sciatic symptoms, those of the spine and abdomen.

Lycopodium is indicated, according to Dr. Hirschel, in sciatica, with tearing, drawing and jerking pains, tonic muscular contraction, which are apparently of central origin and is succeeded by rigidity, semi-paralysis, emaciation, etc. Iodide of potash is indicated as an antidote in mercurial sciatica and Mercury itself in chronic cases. Dietterich, *Mercurialkrankheiten*, gives the following picture of mercurial neuralgia: The patient experiences a drawing and tearing pain along the course of a motor nerve. This pain may be fixed at any especial place, but it more frequently runs from place to place along the course of the nerve. If the disease has persisted for months, the pain not rarely jumps from the original place to another, especially when the barometer is undergoing great changes. The pain presents distinct intermissions, which, however, are not typical and have no special type. If it has been absent for any length of time, only a slight draft, an over-exertion, or over-heating is necessary to have it set in again. Such patients do not bear dampness at all; dry heat and dry cold affect them least. Their functions are so changed that when they are exposed to the greatest heat they are at their best. When, on hot days, other persons seek the coolest spot, they find a real pleasure in exposure to the hottest rays of the sun.

When the sciatica is dependent on vertebral disease, then such remedies as *Cal.*, *Natr. mur.*, *Phos.*, *Silica*, *Sulphur* and allied constitutional remedies are indicated.

Bryonia must also be considered as one of the remedies in the rheumatic cases.

Belladonna should be employed in cases coming on suddenly, and characterized by the severity of the pains, and the high degrees of inflammatory action.

Colocynth has been highly lauded in cases in which the pains are cramplike, but I have never used it. Jousset gives as an additional indication for it, sense of constriction around the haunch. Sometimes the pains are of a burning, boring character, and the paroxysms are followed by numbness.

Turpentine, in doses of from two to five drops, is advised by Hale, in cases dependent upon or associated with some irritation of the urinary

organs. Thus prescribed, it is a favorite or routine remedy with many practitioners of the old school.

Gnaphalium is a good remedy in sciatica. The attacks of pain alternate with periods of numbness.

Ignatia is useful in sciatica in nervous or hysterical patients, the pains being accompanied by great restlessness. The latter is relieved by walking about.

Arnica was recommended by Lambrechts. He administers four to six drops of the tincture daily for several days.

Hughes looks upon *Iris* as a remedy having a possible field in anti-sciatica medication.

Kali hydriodicum is the great remedy in syphilitic cases. It must be administered in large dose to secure the full result.

Potassium iodide may be successfully prescribed in small doses in the rheumatic cases occurring in elderly subjects.

In every case of sciatica, especially those pursuing a chronic course, the patient should be submitted to a thorough examination to determine the primary cause of its obstinacy. This will help greatly in the treatment. Thus, as constitutional causes having an important bearing on the therapeutics, are syphilis, malaria, lead and Arsenic poisoning, diabetes, and gout. Of local or intra-pelvic causes, we have the pressure from tumor and abscesses, and disturbance of the pelvic circulation.

Some few cases resist all medicinal and hygienic measures. These may be treated by nerve stretching, and very successfully at times. So-called subcutaneous stretching of the nerve is usually efficient. The patient is thoroughly anæsthetized, after which the leg is extended on the thigh, the latter strongly flexed on the abdomen.

The cutting operation has now fallen largely into disuse.

Great claims have been made by Valentine Gibson for acupuncture of the nerve itself as a remedy for sciatica. He has treated one hundred cases by this method, fifty-six of which were cured, and but two were failures. If these results were obtained from the treatment of obstinate cases exclusively, they should be considered very good, but that they were of such a nature is extremely doubtful, as it is hardly likely that such a large number of the really bad cases should fall to the lot of any one individual. The method advocated is worthy of trial when all other measures fail. It consists in puncturing the nerve with a spear-pointed needle. The patient can always tell when the nerve has been punctured by the appearance of pain shooting down the leg. The needle should be withdrawn immediately after its introduction. Several punctures may be made at a sitting, though but one at the cutaneous entrance. The operation should be repeated at intervals of two or three days. Sight must not be lost of the fact that these patients, as do others recovering from surgical operations, obtain the effects of rest in bed.

Pains in the Feet.

Half the battle in the cure of painful feet is the recognition of the causes which may be at work. These I have tabulated in my work on Diagnosis, pages 810 and 815. Discretion must be employed in determining just how far constitutional factors play a part in the obscure cases. When pains of various kinds appear in children's feet, the physician should never console the family with the promise that the little one "will outgrow the trouble," but determine the true nature of the case and treat it accordingly. I can give no better example than the so-called "growing pains," which are now known to be a manifestation of childish rheumatism, and which may be the foundation of organic heart disease unless aggressively treated.

Painful Heel.

This may be due to flat-foot, contracted foot, in which case measures already outlined should be followed. More frequently it is dependent upon an inflammation of a small bursa at the base of the os calcis. The treatment then is rest, which may be aided by the wearing of a rubber heel to take off the jar or impact of walking.

Achyllo-dynia.

Pathologically, this is a tendo-Achilles bursitis. Naturally, the necessary treatment is rigid rest of the part. This may be secured by a peculiar system of strapping with adhesive plaster, which takes all strain off the tendo-Achilles. First, a long adhesive strip about two to two and a half inches in width is applied along the sole of the foot and up the calf of the leg, the foot being held in slight plantar extension at the time. Next, this supporting band may be held securely *in situ* by numerous additional straps encircling the leg just below the knee, about the middle of the calf, above the ankle, about the base of the toes, and especially about the ankle and heel, which should be completely covered. If this scheme of fixation fails, we must have recourse to a plaster cast.

Erythromelalgia.

This rare disease is very resistant to treatment. Evidence at present on hand seems to indicate that vascular degeneration is the important pathological foundation of the pain. Savill* and others lay considerable stress upon the value of constitutional treatment. Careful perusal of their writings would indicate that they confuse erythromelalgia with severe types of other vaso-motor neuroses. At any rate, in view of the occasional difficulties in diagnosis, the patient should have the benefit of the chance, and be treated with some interest in the hope that a good

* *Lancet*, 1901, vol. i, p. 1513.

result will follow. Savill announces himself as strongly in favor of the administration of the bromides. Others suggest anti-gouty treatment. Prolonged rest with the feet in an elevated position gives relief of variable duration. Galvanism has helped some cases. The negative electrode is placed in a reservoir of water, as a large basin, into which the patient immerses his feet. The positive electrode, which should be large and flat, is placed over the lumbar or cervical region of the cord. The seances should be daily, and of five to fifteen minutes' duration. Care should be taken as to the temperature of the water in the basin, as extremes of heat and cold aggravate the disease. In several instances, resection of the nerve supplying the painful areas has brought permanent relief. In the case of involvement of the feet the nerve resected is the posterior tibial. The administration of analgesic remedies is an exceedingly unsatisfactory form of treatment, as they are never curative, and, owing to the long term of months or years over which they must be administered, they are capable of doing as much harm as the complaint they are designed to relieve.

Metatarsalgia.

This condition, which is also known as Morton's disease, very rarely yields to any but radical treatment. In the earliest stages it may be cured by removal of the cause, namely, the abandonment of too narrow shoes. Pride and carelessness lead the patient to neglect herself until the operation alone is capable of bringing relief. In the earliest stages the pain may be greatly alleviated, if not made to disappear temporarily, by rest and by immersion of the foot in water as hot as can be borne. The treatment required for the severe cases is excision of the head of the fourth metatarsal bone, and even the amputation of the toe.

On the subject of the proper shoe, Collins* writes as follows: "It is now generally agreed that the boot should be constructed on what is known as a Spanish last; a straight inside, high instep, and an unusually long and high heel. The boot having a broad projecting sole should fit closely over the instep and be of sufficient breadth to give abundant room for the heads of the metatarsal bones, which spread out when the weight of the body is thrown upon this part of the foot."

Painful Great Toe.

Painful great toe may be a sequence or accompaniment of flat-foot, in which case the treatment is that already outlined. Sometimes it is due to excessive exertion, in which case the treatment is rest. Again, it may be a manifestation of gout or rheumatism, when the appropriate treatment is obvious.

* *Treatment of Nervous Diseases*, p. 395.

Flat-Foot.

Of the pain-producing lesions of the feet, not one seems to escape recognition as readily as does flat-foot or pes planus. When recognized, its treatment must be followed with great attention to detail, and under the supervision of the physician. The results will amply repay the trouble taken. Those cases which come to the medical man appeal to him for relief from pain. The deformity is either unnoticed, or gives no concern. The treatment must be purely mechanical and directed to the strengthening of the weakened parts, and the support of the affected foot in their proper position. The measures required include manipulation, proper shoeing, exercise, and the fitting of a proper support. Some cases are so aggravated as to demand forcible over-correction or even surgical operation. These must always be referred to the orthopædic surgeon.

The first procedure is *manipulation* of the foot, which seeks to make passive motion of that member free and painless in all normal directions and to the normal limits. This result having been attained, the regulation of the foot-wear is next in order.

The *shoes* should be of what is commonly known as the "wauken-phast" pattern. Anteriorly, it should be roomy enough to afford sufficient space for the free movements of the toes. The inner side should be nearly straight, and the heel should be broad and low. In some cases, it is desirable to increase the action of this shoe by making the inner border of the sole and heel somewhat thicker than the outer border.

Next we have to study the attitudes and gait of the patient. When walking he should hold the feet nearly parallel, and as far as possible throw his weight upon the outer edge of the soles. An effort must be made also to use the toes by pressing them down against the sole of the shoe. The patient must also avoid too long continuance in any one attitude.

The *exercises* to be ordered have as their object the strengthening of the adductor and plantar flexors. Many movements may be devised for this purpose. Thus, the patient may be directed to practice adduction, extension, and supination of the foot at every opportunity, or he may practice tip-toe exercises, while holding the feet with toes inwards or parallel to one another.

Many cases recover completely under the above plan of treatment. When, however, they are insufficient a brace may be adjusted. The best one for this purpose is known as the Whitman splint or support. This apparatus not only raises the arch of the foot but also supports the foot on the side. The latter is really its most important function. It should be properly fashioned for each individual case. This demands that a plaster cast of the foot in its normal attitude be first made, and on this the splint is made or shaped. It can be worn readily in any shoe, and, after a few

days, when the patient has become accustomed to its use, affords great relief. Modifications of the Whitman brace are not satisfactory. Most of them are clumsy, and while they give a certain amount of relief, they fail to give the side support which is so essential to first-class results.

Cases that fail to yield to the above simple therapy, which must be carried out aggressively, must be submitted to forcible over-correction or surgical operation.

Plantar Neuralgia.

Plantar neuralgia being an accompaniment or result in many cases of the flat-foot, or of hollow or contracted foot, yields to treatment designed to correct the primary deformity. The treatment of flat-foot has been described. The *hollow foot*, when of mild degree, finds relief in a properly fitted shoe with a high "Spanish arch." The indications for treatment are the relief of strain on the sensitive and tense plantar fascia. When the properly fitting shoes fails, then a light foot-plate so arranged as to distribute the strain is indicated.

The recognition of these cases of plantar neuralgia may be rendered difficult and the treatment be misdirected because the pain first becomes troublesome after recovery from some infectious disease, as typhoid fever, influenza, etc.

Facial Paralysis.

It has been my lot to see a sufficiently large number of cases of peripheral facial palsy to teach me that if physicians are not ignorant concerning it, they are at least guilty of giving their patients very improper ideas concerning its prognosis and treatment. I find people expecting and demanding energetic treatment at the time when the parts should be rested, and adopting all sorts of absurd precautions lest a second and fatal attack occur. Perhaps doctors cannot be blamed under the circumstances, for I have found patients resenting in looks, if not in words, my assurance that the affection was in no sense dangerous to life, and that the chance of a second attack is almost infinitesimal. The only danger resides in the fact that there are many examples of the disease in which the paralysis does not clear entirely.

The first element in the treatment of facial palsy is rest for the affected muscles. The majority of cases having been produced by exposure to draft or cold, the application or retention of heat to the paralyzed side of the face is also in order. Both of the indications above mentioned may be met by enveloping the affected side of the face in absorbent cotton. Another very important therapeutic adjuvant is the production of a mild degree of counter-irritation by the painting of tincture of Iodine over and for one inch around the skin covering the mastoid on the paralyzed side. I regard this procedure of the highest importance, and since making use of it my cases have run a much milder course. It should be kept in mind by

the physician that the lesion is one of inflammation of a nerve. Hence the importance of not interfering with rest by ill-judged attempts at stimulation. It is of special importance that repair should not be interfered with by injudicious applications of massage and electricity. Even the electrical examination for the determination of the presence or absence of the reaction of generation must be conducted with judgment.

After two weeks have elapsed, electricity becomes a valuable therapeutic adjuvant. The galvanic current is more efficient than the faradic. Its strength should be just sufficient to excite muscular contractions and no stronger. The sittings should be held daily at first, and of about five minutes' duration. The positive electrode should be placed over the point of emergence of the nerve, *i. e.*, over the stylo-mastoid foramen, while the negative should be applied to the motor points of the various muscles in turn, the current being interrupted by a switch in the electrode handle.

The wide-open eye is nearly always a source of great inconvenience. In some few cases it may become an actual danger. I have seen two cases admitted to the Hahnemann Hospital with panophthalmitis requiring enucleation. As a rule, it is sufficient to use mild boric acid instillations every three or four hours. In the more severe cases it is necessary to keep the eyelids closed by mechanical contrivances. The most convenient method of doing this is by the application of a compress held in place by a shade or light roller-bandage. If this fails to accomplish the object the eyelids should be closed and held so by strips of adhesive plaster. When the eyelashes are long and firm the lids may be kept closed by hair sutures. In some cases in which all the above measures fail to give relief, it may be necessary to stitch the eyelids together.

During convalescence the sagging of the lower lid gives much annoyance by the epiphora it causes. This may be relieved by slitting up the canaliculus.

Massage is a valuable adjuvant to the electrical treatment. It should be performed gently. Fifteen minute seances daily are required.

The most serious element in the prognosis of facial palsy, aside from the lagophthalmos, is the deformity of the mouth. It oftentimes persists when every other relic of the disease has disappeared. It is due in part to the loss of the nerve function, and in part to the long-continued stretching of the paralyzed muscles. The tone of the latter may be preserved in part by the wearing of a piece of celluloid or hard rubber bent in the shape of a hook and inserted in the angle of the mouth. The outer extremity of the same is attached to a rubber band, the far end of which goes around the ear on the corresponding side. Such a contrivance cannot be worn constantly. It may, therefore, be dispensed with during periods of the day when its appearance draws the public gaze to the patient's illness. It is generally conceded that it hastens the cure of the symmetry of the mouth and face.

The majority of cases of facial palsy occur in patients who, aside from a rheumatic diathesis, are in the best of health. Hence, it is exceptional that we are obliged to take account of anæmia and malnutrition in its treatment. Should these or other constitutional defects exist they must receive attention.

When the paralysis follows upon one of the acute infectious diseases, the general condition of the patient requires as much if not more attention than does the paralysis itself.

As to remedies, *Aconite* is probably the best remedy in the beginning, especially in cases arising from exposure to strong cold winds.

Rhus tox. is indicated when the paralysis is an established fact, especially in those cases arising in individuals of a rheumatic diathesis as a result of exposure to damp winds. Trousseau and Phillips in their works praise it highly in various forms of paralysis.

Causticum when the right side of the face is affected. It is useful when the facial palsy is associated with muscular twitchings, or when there are contractures of the affected muscles.

Belladonna, like *Causticum*, will come into play when the right side of the face is involved. In addition to the facial paralysis, there is a neuralgia of the fifth pair of nerves.

Hypericum is a remedy which has been suggested in those cases in which the paralysis has resulted from traumatism of the nerve. It is rather difficult to see how any internal medication can be of value under such circumstances, as the treatment would seem to be purely local.

Gelsemium is indicated in those rare cases in which facial paralysis follows one of the acute infectious diseases, as diphtheria. It is more frequently indicated when the paralysis is associated with facial neuralgia and twitchings of the muscles supplied by the seventh pair of nerves.

Kali hydriodicum should be prescribed in cases dependent upon syphilis.

In facial paralysis dependent upon disease of the middle ear, we have to think of *Silicea*, *Hepar*, *Mercurius*, *Tellurium* and *Aurum*. In such cases, the physician should consult with the aurist, with a view of instituting proper surgical treatment.

If the paralysis is caused by pressure of tumors of the parotid gland, malignant or otherwise, or by pressure of enlarged lymphatic glands, *Conium*, *Hydrastis*, *Baryta iod.*, *Calcareo carb.*, *Iodine*, *Sulphur*, *Arsenicum album*, *Arsenicum iod.* and *Graphites*.

If by periostitis affecting the aqueductus Fallopii, *Aurum*, *Asafætida*, *Silicea*, *Mesereum*, *Fluoric acid*, *Ruta* and *Rhododendron*.

Some cases make very bad recoveries, but they are few in number. For their relief, Stewart and Ballance * have proposed and put into practice

* *British Medical Journal*, 1903.

a very ingenious operation. A healthy motor nerve trunk, either the spinal accessory or the hypoglossal, is sutured or grafted to the one that has been paralyzed. The result is very satisfactory so far as the cosmetic effect is concerned when the parts are at rest. But when, as in the case of grafting the facial on the spinal accessory the patient attempts to make movements of the shoulder, the facial muscles moves at the same time. This may result in numerous peculiarities of expression; but the condition is a great improvement on the state of affairs existing before the operation.

Facial Neuralgia.

When the physician is called upon to treat a case of facial neuralgia he should at once make a positive diagnosis of the nature of the trouble, *i. e.*, whether the case is one of simple facial neuralgia dependent upon reflex irritation or other causes to be hereafter mentioned, or one of *tic douloureux*. For convenience only, we will speak of the case of the first-class as facial neuralgia, and will first study their treatment.

Etiological factors here exert a very important place in the treatment. Notwithstanding the fact that the clinical phenomena are mostly local, constitutional conditions are often operative as exciting or predisposing causes, and must be removed before a cure can be effected. Of these constitutional causes the most prominent are a peculiar nervous instability, which may be called hysterical or not according to the predilections of the observer, arterio-sclerosis, constipation, syphilis, rheumatism, gout, and mental and hysterical strain. The local causes originate almost entirely in the areas of distribution of the cranial nerves, but especially of the trigeminus. Of the causes to be included under this heading, by all odds the most important is dental defects, probably 90 per cent. of all cases originating in the teeth. Other local causes deserving of mention are diseases of the accessory nasal cavities, errors of refraction, insufficiencies of the ocular muscles, glaucoma, latent otitis media, and diseases of the nasal cavities themselves.

It is an unfortunate practice to pay too little attention to the discovery of the causes of the cases in hand, and practice with but little discrimination the various measures necessary to cure one or all of the various conditions above mentioned. If the physician in charge happens to be a specialist in any of the particular lines most of his energy is expended in that direction. The proper management of the patient demands a systematic examination of the different parts involved. If the physician cannot decide for himself which of the causes is at work, he should not hesitate to call in a specialist to work with him.

Leaving the local causes for the present, let us study the constitutional factors, and, to a limited extent, their management. The neurotic cases are probably the most common. They are readily recognized by thorough

acquaintance with the patient and her family. They very seldom demand the energetic treatment required in the management of cases of severe nerve prostration and hysteria. Some advice as to the avoidance of certain improper habits, which such patients nearly always have, with diet and medicine to build up the nervous system between the attacks, and remedies directed to the paroxysms itself when the pain is present, are all-sufficient.

Arterio-sclerosis is seldom the cause of a simple facial neuralgia. When it is, the treatment is that of arterio-sclerosis *per se*. Most of the cases of facial pain dependent upon or associated with this condition are examples of *tic douloureux*.

When habitual constipation is the cause we usually have multiple causes at work. Many of these patients are highly neurotic : and there is an auto-intoxication due to the imperfect elimination by the bowels.

When syphilis produces a facial neuralgia it does so through the development of an exudative inflammation of the nerve sheath or of the bony canal through which the nerve passes. The treatment is based upon the principles laid down in the section on Syphilis. In the early stages of the constitutional infection Mercury is the leading remedy, and may best be administered by inunction of the ordinary Unguentum Hydrargyri over the place where the affected nerve trunk emerges from its bony canal. Occurring in the later stages of syphilis, facial neuralgia is to be treated by the administration of Potassium iodide in doses sufficiently large to bring about a cure.

The rheumatic cases should be treated by the ordinary anti-rheumatic remedies, of which the most prominent are *Rhus*, *Bryonia*, *Colchicum*, *Sodium salicylate*, *Potassium iodide*, and *Aspirin*. Usually the remedies which are the most beneficial for the constitutional state are the ones which will bring the most relief during the paroxysm itself.

Malarial cases demand the administration of *Quinine* or *Arsenic*.

Of the local causes, diseases of the teeth are the most important, and must be cured before the neuralgia can be removed. One must bear in mind that dental caries is not the only lesion, although the most frequently observed. Of great importance is that lesion of modern civilization, the *bête noire* of the dentist, pyorrhœa alveolaris. The pain is usually located so as to indicate the site of the offending tooth ; but too much dependence must not be placed upon this dictum, for I have seen facial neuralgia produced by a diseased tooth on the opposite side of the jaw, and pain in the upper jaw by a diseased tooth in the inferior maxilla. Unless the physician is experienced in the examination of teeth, he will do well if he submits all doubtful or obscure cases to the opinion of a skilful dentist. If he does not do so, he may make himself responsible for the loss of useful teeth. While the loss of one tooth may not be a serious matter in youth, it becomes so in advanced life, when teeth are already too few.

Next to the teeth in importance as the cause of facial neuralgia is disease of the accessory nasal sinuses, especially of the frontal sinuses and the antrum of Highmore. Cases of this character are hardly suitable for the supervision of the general practitioner, as their management demands a high degree of technical skill and nice judgment. If the patient is so located as not to be able to place himself under the charge of a specialist in diseases of the nose, he should at least hold a consultation with one, after which it may be that the case can be treated through the family physician; but for the latter to attempt to carry the case through unaided is usually too risky a matter. It is to be regarded as especially bad practice to assume, because the other causes of facial neuralgia are absent, that, therefore, the case must be one of sinus disease, and then proceed to treat it in the face of such a blind diagnostic shot.

Of the analgesic remedies, *Morphia* is unquestionably the surest in its results, but is not permissible in many cases because of the danger of forming the habit. The coal-tar derivatives, especially *Acetanilid* and *Phenacetin*, usually give a sufficient degree of relief. For methods of administration, the reader is referred to the section on the Treatment of Headaches.

Aconite is a remedy adapted to recent cases of neuralgia, attended by local congestion and rheumatic phenomena. Usually the trouble has arisen from exposure to dry cold winds. The pain is generally associated with tingling in the affected parts.

Belladonna may be administered in either acute or chronic cases. The pain is of sudden onset, and may disappear as suddenly as it came. The attendant phenomena are redness of the conjunctiva, lachrymation, and bright red flushing of the face.

Arsenicum is undoubtedly one of the most efficient remedies in the treatment of purely nervous neuralgiæ. The pains are often of burning character, and are worse at night, particularly after midnight. They are prone to be associated with an intense degree of restlessness. *Arsenicum* is likewise adapted to neuralgiæ of malarial origin. Although not often followed by brilliant results, it is probably our most efficient remedy in tic douloureux. In malarial neuralgia, it is probably most efficient given in the form of Fowler's solution.

Argentum metallicum is indicated in purely nervous cases. The pains increase gradually until they reach their acme, and then suddenly cease.

Actea racemosa should be given in debilitated women with uterine and ovarian disease. It may likewise be called for in rheumatic cases. Special indications are supraorbital neuralgia and sensation at the top of the head as if it would fly off.

Chelidonium is regarded by Hughes as a most efficient remedy for right-sided supraorbital neuralgia. Ferriat regards it as a wonderful

remedy for neuralgia in the right temple and eyebrow. Farrington claims, however, that it will bring relief unless the hepatic symptoms of the drug are present.

Magnesia phos. has effected a number of cures on the modality, relief of pain by hot applications. The pain is worse on the right side, and is apt to recur regularly at night.

Sulphur and *Phosphorus* have accomplished considerable in cases of tic. They must be given, however, in strong doses.

Kalmia is called for in supraorbital neuralgia associated with ptosis. The pains are of burning character and are worse on the right side.

Colchicum has left-sided prosopalgia. The pains are associated with paralytic weakness of the muscles.

Cedron has frequently relieved supraorbital neuralgia, characterized by recurrence at the same hour each day. The pains are of intense burning character, and are worse on the left side.

The *Cinchona* case is likewise characterized by its periodicity. Malarial intoxication is sometimes at the bottom of the trouble. The patient is anæmic and debilitated.

Mezereum has neuralgia over the cheek-bone, or over the left eye. The pains are followed by numbness. It is especially indicated in neuralgia following zona.

Platina has numbness and tingling in the affected parts. The pains increase and decrease gradually.

Spigelia is the favorite remedy of Baehr. The prosopalgia is left-sided, and the pains are of a severe, burning, sticking character. The pains seem to come and go with the sun. The sufferings are greatly intensified by slight external influences.

Gelsemium is a valuable remedy in cases attended by paralytic phenomena, or when the circulatory condition of this remedy is present. It may be given in large doses, if the pain fails to yield to ordinary ones.

Tic Douloureux.

In tic douloureux we have a very different kind of complaint from simple facial neuralgia. With very few exceptions the cases go on from bad to worse over a term of years, until operation is finally demanded. I have never felt that any but palliative measures offered relief. It is the natural course of the disease to present periods of paroxysms and relief. These are very irregular in their duration. One can never say with certainty that this treatment brought about the amelioration just for this reason. Still, I cannot accept the views of those who go to the extreme that all remedies, medical and surgical alike, are unavailing, for I have seen the sequence of treatment and disappearance of pain occur too often to make it a mere happy coincidence.

Of the remedies for tic douloureux, I have the strongest faith in *Aconitine*. This drug was first proposed by Seguin a number of years ago, and has not attained the popularity it deserves. To be efficient a reliable preparation must be used. Much of the Aconitine is comparatively useless. The initial dose of the drug should be $\frac{1}{200}$ of a grain three times daily. This should be increased each day by an additional $\frac{1}{200}$ of a grain, until at the end of three days the patient is taking $\frac{1}{100}$ of a grain three times daily. This quantity is generally sufficient to give considerable relief and to produce some of the physiological effects of Aconite, as tingling of the tips of the fingers. If this dosage fails to give the proper result, *i. e.*, physiological action and relief, we may proceed to increase the quantity *very gradually* until the patient is taking $\frac{1}{50}$ of a grain three times daily. To obtain the necessary amount of relief, it is necessary to push the drug to the extent of producing numbness and tingling of the extremities. Then the quantity is reduced and the patient kept within the lines of physiological action. Numbness and tingling of the tongue is not to be accepted as evidence of the physiological effect of the drug, for it may be due to the local action of the Aconitine on the tongue, and is liable to occur with very minute doses. I have seen numerous cases in the practices of others in which Aconitine apparently scored signal failures, and yet, when subsequently administered as above directed, the palliation was all that could be desired. The mistakes all arise from inefficient or uncertain dosage. Patients have been directed to take smaller doses at short intervals, and have neglected regular administration of the medicine, or the physician has employed very unreliable means of measuring the quantity of the drug. My practice is to use reliable tablet triturates only, and thus I am independent of the size of drops and teaspoonfuls and tumblers. In all cases there ultimately comes a time when Aconitine fails us utterly.

Before abandoning the use of *Aconitine* as unsuccessful, one might do well to change the salt prescribed. Thus, in two instances I have obtained almost theatrical results by prescribing the *Nitrate* in solution instead of the ordinary Aconitia, which had failed to act. The prevalent view that all sorts of the various alkaloids have about the same action, and that where one fails the others will also, while true for the vast majority of cases, should not be followed too blindly, lest we miss a grand opportunity for making a therapeutic success.

We then have to consider the propriety of resorting to other palliatives or to operation. My own preference is for operation. In the majority of cases the patient's age is strongly urged against the latter; still, it is remarkable how well aged subjects stand operations on the fifth cranial nerves. Thus far I have never seen a fatal result—excepting in case of removal of the Gasserian ganglion—although I have had the operation performed in a large number of patients past the age of 80 years. If

operation is refused, we must continue to do our best to bring relief. Again, Morphia is our most reliable analgesic. But owing to the chronicity of the disease it is almost certain to produce morphinism. The only cases in which its regular administration for relief of pain is permissible are those in which the patient's general condition is so bad that it is more than probable that he will not live more than a few months.

Local measures have been urged as occasionally bringing great relief. Prominent among these stands the applications of drugs which refrigerate the parts. Rhigolene and chloride of methyl, especially the latter, have gained a good reputation in this connection, and have cured some cases that have resisted all other measures. Chloride of methyl, when sprayed on the parts, freezes them promptly. It produces a refrigeration of -9.4° F. The tissues become hard like wood under its influence. Considerable pain is produced for a few seconds. Under no circumstances should the spray be directed against any one spot for more than three or four seconds.

Physicians may, if they are so inclined, seek for a reflex cause of the pain in tic douloureux, but I can assure them that they will fail in their search. The disease is an essential lesion of the trigeminus. Errors of refraction, muscular anomalies, defective teeth, etc., have nothing whatever to do with its production. If specialists will treat these cases according to their fads and fancies, let them restrict themselves to such therapeutic measures as are incapable of harm. Particularly would I inveigh against the too prevalent practice of wholesale tooth extraction, as usually practiced on these patients. Very few have been the patients with tic douloureux who have come to me without having previously been made edentulous in the vain hope of thereby curing the disease.

Dana, of New York, has systematized the treatment of tic douloureux by very large doses of *Nitrate of Strychnia* administered hypodermically. The initial dose ranges from $\frac{1}{80}$ to $\frac{1}{40}$ of a grain. This is gradually increased in quantity until at the end of a week the injections amount to $\frac{1}{8}$ to $\frac{1}{4}$ of a grain. One injection only is given each day. The patient is at the same time put to bed and under a rigid rest treatment. In view of the age of the patients, great discretion must be employed in forcing nutrition. Even the enforcement of absolute rest day in and day out cannot be made arbitrary. The patient's condition and temperament must be considered, and governed accordingly. The treatment is usually extended over a course of from six to twelve weeks. I have never tried it in any of my cases, hence cannot speak of its efficiency from personal knowledge; but Collins and others have written in praise of it.

Electricity is valueless in tic douloureux. There are those who think differently, and there are patients who will insist upon trying it. If it is prescribed, the galvanic current should be used with the positive electrode over the painful nerve trunk, and the negative at some different point. The

current should be mild, *i. e.*, three to four milliamperes, and free from interruptions.

As already stated, there comes a stage in the course of *tic douloureux* when all internal and local remedies fail, and surgical measures must be adopted. Those suggested include nerve stretching, nerve resection, nerve avulsion, excision of the Gasserian ganglion, and ligation of the common carotid. All of these procedures have been followed by great amelioration in individual cases. It is very rarely, however, that the result is a permanent one. Some authorities strongly urge the claims of stretching; for, say they, when the disease returns, the operation may be repeated an indefinite number of times. Resection of the nerve affected offers better prospects, however. The portion of the nerve removed should be as extensive as possible. The resulting relief usually lasts from one to six years. Once in a great while it is permanent. Avulsion seems to be decidedly unscientific, if not really brutal. In several cases, where these operations have failed to cure permanently, removal of the Gasserian ganglion has been practiced with good results. Sufficient time has now elapsed to enable us to place great confidence in this operation. The relief appears to be permanent. The only drawback is the danger to life, the mortality of the operation being 20 per cent. When all operations on the nervous apparatus have failed, we may lastly resort to ligation of the common carotid. This has been performed but a few times for *tic douloureux*. Andrews, of Chicago, proposes that when the pain returns after resection of the nerve, that the cicatrix from the first operation be opened and stretched, he believing in this way he gets some mechanical effect on the nerve fibres deep within the bony canal. He reports two cases in which this was done with excellent results. This operation is hardly likely to be generally recognized. It involves danger to life and does not promise the permanency of result obtained by removal of the Gasserian ganglion.

The newest treatment of trifacial neuralgia is by means of deep injections of Alcohol. This treatment was first proposed by Lévy and Baudouin,* and has still more recently been fully exploited by Patrick and Hecht.† The latter authorities, in independently written papers, speak of the treatment in the highest praise. As stated by them, the results are fully as good as those derived from the different surgical procedures. The advantage of the method is the avoidance of a disfiguring operation, and the saving of two or three weeks in hospital while recovering from the same. It also gives us one more procedure to adopt before resorting to the knife. The number of cases thus far reported is such as to place the deep injections of Alcohol in the list of recognized therapeutic procedures. I must disagree with the eminent authors in their assertion that it is an operation which can be per-

* *Presse Médicale*, April 17, 1906.

† *Journal of the American Medical Association*, November 9, 1907.

formed by any intelligent general practitioner without previous surgical experience. Technically, it impresses me as far more difficult than any of the cutting operations—removal of the ganglia excepted. Even a surgeon should not attempt it until he has made a careful study of the landmarks on numerous human skulls, and has made sure of his operative technic by practice on the cadaver. Were it necessary that the alcohol enter the nerve sheaths, the operation would be doomed to failure in the majority of instances. Experience teaches, however, that the best results are obtained when the nerve is entered; but great relief and even comparative cure follows if the injection is deposited near the nerve trunks. Patrick has performed the operation in his office, the patient subsequently going about his affairs as usual. Those interested in the subject should read the original papers, in which the anatomical landmarks and the operative technic are fully demonstrated.

Literature teems with many other suggestions respecting the treatment of facial neuralgia, but they are for the most part unreliable, or have the indorsement of insufficient authority.

Facial Hemiatrophy.

This condition is absolutely incurable. In some few instances it is possible to discover and remove the cause. This can only be done in those cases in which it has followed lesions of the fifth nerve. Even then the result is problematical. Surgeons have suggested that the part at which the atrophy is first manifested be excised; but so far as I know there is nothing practical in the way of results to justify this radical procedure. Resection of the branches of the fifth nerve has also been recommended, but this also is based on mere theory. About all that can be done is to use galvanism to retard the progressive march of the disease.

Facial Hemihypertrophy.

With this condition may also be considered the hypertrophy of single parts or limbs. Nothing is known concerning their pathology. Nerve resection seems to be a more rational procedure than in the foregoing, though it should not be attempted unless it is certain that the remedy will not cause a greater functional loss than the evil for which it is proposed. There is no therapeutic literature covering the subject.

Spasm of the Phrenic Nerve.

Tonic spasm of the diaphragm is very rare as an idiopathic condition. It constitutes one of the sources of dangers in tetanus, tetany, and other convulsive disorders. Treatment to be efficient must be prompt. Besides the general measures directed to the causative factors, we may employ hot fomentations or the faradic brush to the region of the diaphragm and inhalations of chloroform.

Clonic spasm of the diaphragm, commonly known as **hiccough** or **singultus**, is ordinarily a trivial disorder. As a phenomenon of disordered or overloaded stomach, it requires emptying of that organ by an emetic or the stomach tube, when sufficiently obstinate to require such heroic treatment. Ordinarily, the spasms disappear after the taking of a few swallows of water. In hysterical and some other cases very prompt results follow the administration of Apomorphia hypodermically in doses of one-twelfth of a grain. In the obstinate hysterical cases isolation from home and friends is necessary.

In persistent cases, associated with gastric disorders, regularly repeated massage works a prompt cure.

As a terminal symptom, by which I mean one of the phenomena of uræmia, brain disease, peritonitis, intestinal perforation (as in typhoid fever), the treatment is very unsatisfactory, even to the powerful influence of analgesics and hypnotic remedies, as Morphia and Chloral.

Moschus is held to be a specific for serious cases of hiccough by some practitioners. Wood speaks of the drug as follows : * “ In our experience in the crisis of low fevers, when the symptoms of nervous exhaustion are extreme and threaten death, Musk is a very valuable remedy. Thus, in advanced typhoid fever a condition sometimes develops in which the pulse is feeble and the temperature has a tendency to rise to a great height, but it yields almost immediately to the use of cold, only, however, to remount as soon as the cold is withdrawn. We have seen Musk at such times control the temperature, steady the pulse, and apparently save life. In other cases of advanced fevers the powers of the system entirely give out, and the patient passes into a condition of collapse, with subnormal temperature and mayhap coma vigil ; this state we have also seen relieved by Musk. Originally recommended by Trousseau in the *ataxic pneumonia* of drunkards, Musk may be a useful remedy in any form of adynamic pneumonia when there is wild or muttering delirium. The dose is ten to fifteen grains.”

The remedies which may be studied as of value in obstinate hiccough include *Ignatia*, *Nux vomica*, *Stramonium*, *Cicuta*, *Arsenic*, *Pulsatilla*, *Hyoscyamus*, *Veratrum album*, and *Creosote*.

* *Therapeutics: Its Principles and Practice*, p. 74, 13th edition.

CHAPTER XXIV.

SO-CALLED FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM.

Epilepsy.

MANY of the bad results in the treatment of epilepsy are undoubtedly due to a lack of knowledge as to what constitutes the disease. An experience that has covered over fifteen hundred cases, leads me to assert that a very large proportion of the cases are diagnosed in their incipiency as reflex convulsions. This error is not unnatural when one considers the stress that has been placed upon the frequency of reflex convulsions by certain authorities. Specialists, whose training in the domain of general medicine has been sadly deficient, are likewise largely responsible for the promulgation of what, as applied to most cases of epilepsy, is a false theory. It is a good working rule to regard every case of convulsion, *no matter how probably reflex*, as *possibly* epileptic. While one is generally safe in deciding that convulsions not due to organic disease occurring prior to the third year of life are reflex in origin, he must not lose sight of the fact that their frequent repetition can give rise to the convulsive habit; and thus true epilepsy sometimes finds its origin. It is not a pleasant task to speak to parents of the possibility of their children degenerating into epilepsy; and yet a strict regard of duty should lead us to give that warning, for I believe that that warning, if respected, will do much to prevent a probability or possibility from becoming a reality. That this warning is not an idle one will be shown if one but takes the trouble to investigate the early history of epileptics. In more than half the cases a history of infantile eclampsia is obtainable.

And right here let me give a little piece of advice that should be adopted as a routine measure in managing every case of epilepsy: Direct the patient's attendant to keep a day-book. In this book should be recorded the number of convulsions, their characteristics, time of onset, duration, associated symptoms, etc. All morbid phenomena occurring between seizures should likewise be carefully noted. Such a book has a two-fold purpose. In the first place, it affords us a certain amount of help not otherwise obtainable in the treatment of the case; and, in the second place, it is invaluable as indicating in no uncertain way the progress made. Certain hospitals treating large numbers of epileptics have specially prepared charts for indicating the number of convulsions. By means of this

device one can see the course of the disease, so far as it relates to the number of convulsions, at a single glance. Without some such record as the day-book or the chart, any testimony as to improvement or cure is more or less unreliable.

When once epilepsy has developed, the plan of treatment which must be followed must include careful observance of all the rules of personal hygiene, including regular habits and careful dieting, removal of all possible sources of irritation, proper medication, and, in suitable cases, surgical intervention.

The first effort to be made in behalf of the epileptic is the perfection of the organization for his care. The nature of the disease is such that, with very few exceptions, a trained nurse or attendant is out of the question. Some one member of the family must be constituted the medical guardian of the patient to see to the enforcement of all the regulations prescribed by the attending physician. It is right here that so many cases fail. What is everybody's business is nobody's business is an old axiom, and applies to families where all hands look after the patient to the patient's neglect. The person must be one constituted with authority, and be possessed of a good level head. Unfortunately, we fail to find such in exceptional instances only. Such persons are rare under the best of circumstances. In the families of epileptics, we are only too likely to find a neurotic streak throughout all or many of its members. The existence of the neurotic taint in the others makes it doubly difficult to secure good results by the efforts of the well-balanced. When the physician can secure the co-operation of a good sensible member of the family, the results, according to my experience, have been very good indeed. The temper of the epileptic, none too good at the best, must be trained to the submission of its owner. His mental equipoise under trying conditions must be educated. Without any undue fussiness, lest hypochondriasis be added to the epileptic habit, he must be taught attention to every possible hygienic detail.

Considering now the question of diet, we come to one of the important items in the treatment of epilepsy. Some authors do not hesitate to make this the first in importance, claiming that it is far more efficacious than all other agencies combined. When, however, we come to study the writings of authorities, we find the greatest possible discrepancies of teaching, according as the author takes this or that pathological view of epilepsy. Seguin, Gowers and others assume that the nervous system should be fed with the most nutritious of foods, as in neurasthenia, and do not hesitate to strenuously advocate a diet into which meat enters largely. Haig, believing that epilepsy is a disease resulting from the uric acid diathesis, prohibits meats; others, while not agreeing with Haig as to the origin of epilepsy in uricæmia, consider the meat diet positively harmful as promoting a con-

vulsive tendency. At one time I held to the latter view, contending that clinical facts seemed to favor it. Continued experience has led me to modify my views to the extent of permitting animal foods within reasonable quantity in the case of adults. Larger children may be permitted meat but sparingly. The main idea is that the diet shall be sufficiently mixed in character to favor the highest possible standard of nutrition. Undoubtedly, it is necessary to watch the patient for any evidences of intestinal auto-intoxication. Clinical experience has demonstrated that when such phenomena occur, the diet should be changed to one of purely vegetable character for a time. Of far greater importance than the general character of the food is the quantity eaten and the manner of taking it. Nothing is more harmful than overloading the stomach, especially with articles proverbially indigestible. Above all things, the food must be thoroughly masticated. These are instructions which will require great difficulty to enforce, for epileptics have ravenous appetites and exhibit no judgment whatever in gratifying them. It is needless to say that indigestible foods, as pastry, mince-pies, cakes, etc., should be forever eschewed.

In cases in which the attacks are principally nocturnal, the evening meal must be taken as early as possible, and should be sparing in quantity and light in quality. In every case the relationship between time of attacks and taking of food and articles eaten should be carefully studied, and our advice given according to circumstances. One must not jump too hastily to the conclusion that any special food is harmful until he has had full opportunity to study the case thoroughly. One must not be too ready in accepting the *ipse dixit* of untrained laymen; nor, on the other hand, should we ignore any suggestions which their observations may call forth.

Any disorder of the stomach must be carefully treated. In fact, it is of the highest importance to keep this organ in as good condition as possible.

Anæmia is at times a serious difficulty, though rarely observed among patients of the upper classes who abstain from quack remedies, and depend entirely upon the advice of their physicians. When present, it may be attributed to too much confinement within doors, a restricted diet, and excessive drugging. It is exceptional, however, for the bromides to produce anæmia when given within reasonable limits. Personally, I have never found anæmia to result from this cause. The drugs that have brought it about have all belonged to the proprietary class, and it is to be presumed were unwisely prescribed. The remedy for the associated anæmia is obvious. Fresh air, mixed diet, judicious medication, and Cod liver oil overcome the condition. As remedies, we may give *Cinchona*, *Ferrum*, *Arsenicum*, and *Nux vomica*.

Alcohol, coffee, tea, tobacco, and like substances which have no value in enhancing the nutrition of the patient should be forbidden. They never do any good, and nearly always are exceedingly harmful.

The epileptic requires amusement. In laying down rules for his recreation we must forbid those games which subject him to danger in case of an attack, and, secondly, those which require unusual exertion, or are likely to disturb the intracranial circulation. Rowing, foot-ball, horse-back riding come under the first class ; while swinging, round dancing, and tennis belong to the second. Bicycling at a moderate speed and golf are permissible. Patients who are fond of walking may indulge themselves, but should never go through unbeaten paths unattended. In this matter of restricting amusements one must not go to extremes lest he make the life of the epileptic a burden.

Sexual hygiene is an important matter. It is very doubtful if sexual excesses—even masturbation—ever caused epilepsy, though there can be no question about their ability to aggravate the disease when it has once developed. Epileptics are undoubtedly great masturbators, probably because the disease produces a mental degeneracy leading to sexual vice. The patient, whether boy or girl, must be carefully watched, and all bad sexual habits stopped. The nearer the patient can come to a life of celibacy the better will it be for him. This brings me to a very important question—that of marriage, especially for female epileptics. It is altogether too common a practice for physicians to advise marriage as a step towards cure. This advice should be shunned. Certainly, no marriage should ever be undertaken by an epileptic without the other partner to the contract being fully informed as to the conditions. Silence based on the hope that the married life will work a cure is little short of criminal, for the prospects of regular sexual indulgence proving of value are illusory. I can well recall one sad instance in my experience, where one of my patients had been advised by another physician to get married. The result was just the reverse of that which had been expected, the attacks being quadrupled in frequency. Should patients refuse the advice given, they should be warned against the danger of procreation, for there is always a most excellent chance of transmitting epilepsy or some other neurosis to the unfortunate offspring.

The reflex origin of epilepsy is a fruitful source of discussion. Physician after physician can tell us of cases he has cured by this or that surgical procedure ; and yet the details are barely more complete than they would be for a well-told anecdote. It is noteworthy that each enthusiast has his particular operation which will cure all cases. One man can tell us of countless cases cured by circumcision. Our friend the oculist may tell us of cases cured by the fitting of glasses ; the aurist, of cures effected by attention to the ears. The neurologist, notwithstanding his careful attention to all possible sources of irritation, says that he cures his cases with the greatest difficulty, and in exceptional instances only. For a time the gynecic surgeons were oöphorectomizing the poor helpless epileptic. So far

as my knowledge of medical literature goes, I know of no case in which a permanent cure has been effected by this operation other than in those to which I shall refer presently.

While thus inveighing against the rush for brilliant cures based on the hypothesis that the case may have originated in reflex irritation, I would insist upon the value of removing every possible cause of ill-health, especially irritation in the course of the cranial nerves. If errors of refraction exist, they should be corrected by all means. The teeth must be kept in order; especially should overcrowding receive attention at the hands of a competent dentist. Probably the most important, because it is capable of seriously impairing the general health, is attention to the post-nasal space. This should be examined as a routine measure, and whenever adenoids are found they must be removed. On the other hand, the wild fads and fancies of the orificialists and Stevens school of ophthalmologists should receive no sanction. Muscular anomalies may be found occasionally, and of course must be given scientific attention; and rectal irritation from local disease must be removed, but under no circumstances should the wild resort to indiscriminate tenotomies or sphincter avulsions be advised or permitted.

The general practitioner is prone to advise circumcision as a curative measure. To this there can be no objection, as it is a hygienic measure. Harm comes from it, in that parents expect it to work a cure. As it usually fails, they lose confidence in the physician, and then consult quacks or resort to proprietary remedies. The operation should not be urged even as a certain preventive of masturbation. It certainly does give some aid in this respect; but that its power is not absolute is shown that self-abuse is not uncommon among Jewish boys.

Treatment of Individual Seizures.—Nearly all epileptic seizures are self-limited as to time, the convulsive movements being all over in the course of three to fifteen minutes. Nevertheless, the condition is so frightful to the beholder that the physician is oftentimes called upon to give instructions as to the proper treatment to follow during their continuance. In the majority of cases all that we can do is to give instructions as to methods for preventing the patient from injuring himself. The most likely danger is biting of the tongue. This may be prevented, when sufficient time is given, by placing a piece of wood or cork between the teeth. From a practical standpoint this device is of little use, because the biting of the tongue takes place so early in the course of the attack as to prevent the attendants from reaching him in time. The next procedure is to place the patient on a thick rug or bed, or some surface where he can go through the convulsive movements without inflicting injury upon himself. The clothing should always be loosened, so as to avoid embarrassing heart and respiration.

There is a small proportion of epileptics in whom the attacks com-

mence with aura which run up one of the extremities, *e. g.*, one arm. The investigations of Buzzard have proven that if the arm be encircled with a blister that the aura stops when it reaches the lesion thus produced, and the subsequent stages of the convulsion are prevented. Another method of producing the same result is self-flagellation of the extremity in which the aura starts. Still another device is the wearing of a girdle about the arm. This is tightened as soon as the warning sensations are experienced. It is now a well-attested fact that the repeated abortions of epileptic seizures by any of the above methods causes the attacks to form the habit of stopping at the point of artificial arrest for some time after such treatments have been discontinued.

After the subsidence of the spasm, it is a wise plan not to let the patient go to sleep, but to arouse him to consciousness by the administration of stimulants, such as strong black coffee. This course will prevent the generally wretched feelings which so frequently follow the attacks, which are succeeded by long and deep stupor. After the stage of complete consciousness has been attained there can be no objection to the patient sleeping, if he so desires.

The Status Epilepticus.—This dangerous complication of epilepsy demands energetic treatment. The most efficient measure is the inhalation of Chloroform. If this fails, it may be fortified by the inhalation of two drops of Nitrite of Amyl. Other remedies include the administration by the rectum of *Sodium* or *Potassium bromide*, *Atropia* hypodermically, *Chloral hydrate*, in doses of ten to twenty grains, *Amylene hydrate* fifteen to sixty minims by the rectum. The prolonged coma demands stimulation, the best remedy for which is the injection of strong black coffee high up in the rectum. In case of hyperpyrexia, the cold pack is the best treatment.

Medicinal Treatment.—The medicinal treatment of epilepsy is not in a satisfactory condition. From our homœopathic remedies we do not get any regular results, while the Bromides are, in the great majority of cases, only efficient palliatives.

In the case of failure to get epileptic seizures well under control within a reasonable time, there should be no question concerning the resort to the Bromides. Bromide of potassium has been abused to such an extent as to deter the timid from its use. It has been accused of producing a condition far worse than the disease, physicians of all schools uniting in its condemnation. Why should it not do harm if used ignorantly or indiscriminately? And yet if it is used with judgment it is the greatest boon many epileptics have. When it is suited to the case—that is to say, when it causes a cessation of the convulsions—it most assuredly improves the mental faculties instead of depressing them, as claimed by its opponents. I have seen this over and over again. My only bad results in the way of

bromism have been in cases where I have been obliged to treat the case at long range, *i. e.*, with infrequent personal interviews. There need be no fear of giving large doses. One of the reasons heretofore for failure has been that the maximum dose with most physicians is but thirty grains daily. In the majority of cases such doses are inefficient. Nevertheless, even smaller doses than this are efficient in individual cases. Thus, I have at the present time under my care a boy of seven years of age, who has remained free from attacks for three years, although he is taking but five grains daily. In that case, the treatment was started with ten grains three times daily, but the phenomena of bromism appeared early, and the dose was reduced to the minimum as above stated. But in the majority of cases such doses are inefficient, and unless they control the fits must show a depressing influence upon the mind. When, however, an efficient dosage is adopted—and by efficient, I mean quantities sufficient to keep the fits away entirely—one will be astonished at the improvement in the patient's general condition.

One naturally views the effects of the bromides in epilepsy according to his individual experience. I do not wish to convey the idea that the drug it without ill-effects in all cases, or that it is always curative or even palliative. On the contrary, I know that this is not the case. But there is a large number of epileptics whose natural tendency is towards dementia. They are desperate cases, and they go from bad to worse. Many of them have organic cerebral disease. No drug will do them one iota of good. Yet they have been dosed not only with bromide, but with every drug conceivable. Patented medicines have been administered by the score, and bromide by the five cents' worth without the sanction of the physician. Is it any wonder that such cases end in the asylum? At home their friends are too lazy or too poor to give them the proper care, and this only adds to their miseries. Surely, we should not blame bromides for such results. And yet it is this class that has done much to give the Bromides their bad name. Of course, we must meet with many serious cases in the families of the well-to-do in which dementia is a prominent feature.

If one wishes to avoid bromism and would carry the palliative treatment of epilepsy to its greatest efficiency, he must pay the greatest attention to the most minute details. The fact that epilepsy is best treated palliatively by bromides should not lead to routine carelessness.

The dose that will be efficient can only be decided by careful observation of the case. Repeated visits to the physician are necessary to decide this point. If the attacks occur several times daily, it is usually advisable to see the physician every one or two days. If they recur at long intervals, weekly visits will be sufficient, unless there are *suspensions* of the phenomena of bromism appearing.

The smallest dose that will entirely suppress the seizures is the one to

prescribe. We should aim at making the suppression absolute. This, of course, cannot be done in every case, or even in the majority of cases, but that should be our object. If we fail to attain it, we must rest satisfied with the dose that produces the maximum effect without exciting bromism.

One of the unfortunate effects of Bromide of Potassium is its disposition to disorder digestion, an effect, too, that has more to do with the production of bromism than appears at first sight. We have two measures that obviate this to a great degree, namely, large dilution of the dose, preferably in a feebly alkaline water, and administration after meals. These are highly important points, which must be observed in every case. Given thus the medicine is much more rapidly absorbed. It should likewise be drunk slowly.

It is better to give the drug in as few doses as possible. I would never give it oftener than three times daily. With the majority of people it is a difficult, if not almost impossible matter, to get them to take medicine regularly over any great length of time. The longer the intervals between doses the more have we reason to expect regularity. As to the times at which the drug should be given, we must be governed by individual cases. One dose should be given as early in the day as possible; while another should be given at an hour about from four to six hours before the usual time at which the fits are likely to occur. Gowers recommends large doses at long intervals; thus, one drachm every day, two drachms every two days, three drachms every three days, etc. The longer the interval between the doses, the larger is the dose prescribed. He claims that in this way the maximum curative effects are obtained, with the least liability to bromism.

One can never, and I mean never most emphatically, entrust the administration of the drug to the patient himself. I never saw an epileptic who would take his medicine regularly unless he had some one to attend to it for him. This is true, notwithstanding the strongest incentives to recovery; it becomes more forcible when medicinal action has secured an all but permanent cessation of seizures. Epileptic patients are their own worst enemies.

Having once begun the administration of the bromides, it is necessary to keep them up steadily for years. It has been said that a case cannot be considered as cured until the fits have remained away for three years. I would err on the safe side, and say that one can never say when a case is cured. The fits may have remained away for five, nay, even ten years, and yet a relapse may occur. I would insist upon continuous medication for a period never less than three years after the last seizure, and, if possible, I would keep the patient under the drug for five years. I do not know but that if I were an epileptic I should insist upon taking it all my life.

In female cases, in which the attacks seem to recur more frequently

about the menstrual period, it is advisable to give the drug in larger doses than at other times. I should say here that the *aggravation* of attacks about the menses does not by any means signify a reflex origin of the disorder.

Bromic acne has been greatly feared. This deleterious effect of the drug should not occasion the slightest anxiety. It may be entirely obviated by the administration of Fowler's solution of arsenic. The bromic acne is not an index of the physiological effect of the drug. The readiness with which it is produced depends largely upon peculiarities of skin structure.

Some patients are more susceptible to the unpleasant effects of bromide than others. While small doses exert a depressing influence in a few, there are others who can take most extravagant doses without a symptom being produced thereby. Other things being equal, children seem to be able to withstand bromism better than adults. Small, delicate people, people with organic heart disease or feeble circulation, or epileptic cases dependent upon organic disease of the brain, stand bromides very poorly. Under all these circumstances the drug should be administered with the greatest care, as unpleasant, if not dangerous, effects may be produced if its use is persisted in.

Even after having decided upon what is apparently an efficient dosage in a given case, it is not wise to let the patient keep on with the drug without medical supervision. There are circumstances that indicate diminution or increase of dose. In the case of any intercurrent illness, medical or surgical, the large doses are not so important, for illness and surgical operations and accidents are of themselves most efficient anti-epileptics. The drug should not be discontinued, however, excepting in the case of an acute illness of a most depressing character. Patients who are subject to exacerbations and ameliorations of attacks in certain seasons of the year, should have the dosage regulated accordingly. Increasing age and size of young epileptics will require a gradual increase in the dose. An extra dose should also be administered when patients have experienced any unusual excitement or fatigue.

If all the above rules are carefully followed, I am satisfied that bromism will, in a great measure, be robbed of its terrors. Unless they are followed in the minutest particular, the best results from the drug will not be obtained.

There has been much discussion as to which of the bromides is the best. So far as the Potassium, Sodium or Ammonium salts are concerned, I do not think there is much choice. Some cases seem to get along better on one than the others. For over fifteen years I have used largely the *Bromide of Strontium*, and am now satisfied that it gives better results with decidedly less interference with the digestive functions. It is very important that a reliable preparation of the drug be prescribed. My experi-

ence has shown me that the various preparations on the market have different degrees of solubility, hence cannot be the same thing. I have, therefore, settled upon Merck's Strontium bromide, which I now use exclusively.

For a number of years I held to the view that when one of the bromides failed it is exceedingly unlikely to obtain good results from any of the others. Experience has shown this to be an error. In case of failure of my favorite, the Strontium salt, I resort to one of the others, or even to the mixed bromides.

As to the bad effects of bromide upon the mind, I think, as I have already hinted, that they are largely overdrawn. The great trouble is that epilepsies are not properly differentiated. Certain types are invariably associated with the highest degree of mental degradation, while cases exist in which the most brilliant intellect is to be found. It has been said that Julius Cæsar and Napoleon Bonaparte were both epileptics. These cases, however, are exceptional. The natural tendency of epilepsy is to produce mental deterioration proportionate to the severity of the disorder. This fact was well recognized many years before the bromides were introduced. This being the case, one should not be too ready to ascribe the dementia in a given case to the effects of the treatment rather than to the course of the disease.

There is a class of cases of which I have seen several, and in which the prominent mental characteristic has been a violent irritability of temper, becoming increasingly severe as the interval between attacks lengthens. Finally, the temper becomes unbearable to those about the patient. In such cases, I have withdrawn the bromide entirely until a convulsion takes place, after which the patient becomes properly amiable. I have always believed that it is the suppression of the motor explosions that is responsible for the mental state rather than the bromide *per se*.

The bromides will not benefit every case of epilepsy, for they fail to reach about 10 per cent. of the cases. There are still other cases in which the improvement is not satisfactory. In many of the latter, there can be no question of the fact that the failure is dependent in a great measure upon improper technique, and the carrying out of all the hygienic details. Still, the most enthusiastic advocates of this class of remedies must admit failures in numerous instances. We must have some other remedies to help us out.

Seguin, in his excellent lectures on the treatment of functional nervous diseases, advocated with considerable enthusiasm the fortifying of the bromide with an equal quantity of chloral hydrate. I have had no experience with it. Still, those who have tried it speak well of it, and say that the danger of forming the chloral habit is very slight. It is needless to say that the dose of chloral should never exceed fifteen grains three

times daily. In those cases in which the attacks come on at night, it is a good plan to give the chloral only in the evening.

The Flechsigs Opium treatment is in as high favor in some quarters as it is condemned in unqualified terms in others. The plan as outlined by Flechsigs is to give doses of the dry extract of Opium in doses ranging from five to ten grains daily, the maximum dose being attained, say at the end of the first week, of giving the remedy. This dosage of Opium is maintained for a period of six weeks. Then the bromide salt is resumed in full doses. At the end of three weeks more the bromide is reduced one-half. The case is continued with the diminished dose of bromide for an indefinite period. At the end of a year or so, if the symptoms suggest a change, there may be a resort to another course of Opium. While I have not adopted the full Flechsigs treatment in any of my cases, I have several times used Opium in doses of one grain three times daily in conjunction with the bromide, and it has served to increase the efficiency of the bromide salt.

Very many drugs have been recommended for the cure and alleviation. Most of them stand as monuments to therapeutic credulity; they are utterly worthless, and the original recommendation of them stands without a particle of reason. Some of them are positively harmful.

Within recent years, it has been proposed to increase the efficiency of the bromides by withdrawing all Sodium chloride from the patient's diet list. This must necessarily make food unpalatable. It certainly does what is claimed for it; but the bromides must be watched more carefully than when the ordinary methods are followed, although smaller quantities of the drug are sufficient. Of course, it is essential that the patient shall have some little salt with his food. Eason* has suggested that the bread be salted with phosphate of soda. Balint† offers the suggestion that part of the bromide as Bromide of soda be used for seasoning the bread. There is no doubt of the value of salt deprivation in most cases.

As to *Enanthe*, *Cicuta virosa*, *Hydrocyanic acid* and other so-called specifics, I have never seen one satisfactory result, notwithstanding the large number of cases in which they have been administered. It is but just to say, however, that they were given mostly in dispensary cases, in which class one must rely almost exclusively upon drug treatment, for dispensary patients have neither the intelligence nor the disposition nor the means to pursue a proper hygienic course. In private practice my cases have all been previously treated over terms of years by physicians of both schools. Dr. W. M. Butler reports having cured several cases with Hydrocyanic acid, but he gives no particulars as to the character of the cases or the time over which treatment was extended. The most successful medi-

* *Scottish Med. and Surg. Journal*, vol. xi, p. 123. † *Neurolog. Centralbl.*, 1903, p. 347.

cation seems to be that in which the aim is to keep the general health up to the highest standard. *Nux vomica*, *Belladonna*, *Fulsatilla*, *Bryonia*, *Cuprum*, *Plumbum*, *Hyoscyamus*, and like remedies, are not only valuable but necessary.

Of the homœopathic specifics (?) *Ænanthe crocata* has enjoyed the widest and best reputation. Dewey* quotes Talcott as follows:

"1. The fits decrease in number 40 to 50 per cent. 2. The convulsions are less severe than formerly. 3. There is less maniacal excitement before the fits. 4. Less sleeplessness, stupor, and apathy after the fits, and the debilitating effects of the attacks are more quickly recovered from. 5. The patients treated with *Ænanthe* are less irritable, less suspicious, and less fault-finding. 6. The patients are more easily cared for."

Much has been said of the tissue remedies. I have tried Schüssler's *Kali mur.*, but without the slightest sign of success. *Silicea*, *Calcarea carb.* and *Sulphur* have done considerable good when systemic conditions indicated those remedies. *Argentum nitricum* in one case effected a cure that lasted two years, when there was a relapse. I know nothing of the subsequent history of the case.

The Bromides are not to be regarded as omnipotent, nor are they to be tried before strictly curative medication has failed. I think I have made this plain. The remedies which have given the best results in epilepsy and their indications are the following:

Cuprum metallicum has been spoken of in the highest terms by Halbert, Hughes, Jousset, Bähr, and Bayes. The paroxysms are ushered in with a cry, and the convulsions are attended by blueness of the face and lips, rotation of the eyeballs, frothing at the mouth, the spasms of the flexor muscles predominate, and the attacks are followed by deep sleep. Jousset recommends it particularly for cases in which the paroxysms recur during sleep. The aura usually starts in the epigastrium.

Belladonna is indicated by the predominance of cerebral symptoms, and the character of the aura, which may be a sensation as of a mouse running up the arm or leg, or of heat ascending from the epigastrium. It has also been recommended for special sense aura. To quote Farrington:† "Hot head, flushed face, throbbing carotids, starting from sleep in terror, etc., foam at the mouth, having the odor of rotten eggs. The convulsive movements may be a combination of empros- and opisthotonos; or the patient, usually a child, becomes suddenly rigid, stiffens out with fixed, staring eyes." *Belladonna* may be employed successfully in partial convulsions or in *petit mal*, when the paroxysms consist of momentary vertigo.

Nux vomica owes its efficiency in the treatment of epilepsy mainly to its beneficial action in improving gastro-intestinal functions. Needless to

* *Practical Homœopathic Therapeutics*, p. 107.

† *Clinical Materia Medica*, 2d edition, p. 392.

say, gastric symptoms are nearly always present. The aura starts in the epigastrium. The convulsive movements include opisthotonos, trembling and twitchings, rigidity of the limbs, involuntary defecation and urination, and extreme sensitiveness to external impressions.

Cicuta virosa.—The attacks are preceded by a strange feeling in the head, extreme sensitiveness of the eyes to light, and slow pulse. Baehr makes venous congestion, especially of the abdominal viscera, an additional indication. The paroxysms themselves are characterized by sudden rigidity followed by jerkings and violent distortions, and these again by great prostration. The tonic spasms are renewed by peripheral irritation; the face is dark-red; frothing at the mouth; opisthotonos; fixed, staring eyes. Jousset recommends it when the attacks are accompanied by involuntary urination and tympanites.

Hydrocyanic acid has been recommended more particularly for recent cases. Indicating symptoms include confusion of the head and vertigo; jaws clenched; upper extremities contracted and the hands clenched; unusual stiffness of the legs; spasms commence in the toes, followed by distortion of the eyes towards the right and upwards after general spasms; aura feels like a shock in the brain; the fit is preceded by a cry and laryngeal pain.

Calcarea carb., by reason of its utility in rachitic states, should do much in epilepsy. It was highly praised by Boenninghausen in cases characterized by paroxysms of vertigo and loss of consciousness. The patient is by preference a tuberculous or scrofulous subject. There is sweating of the head during sleep. Epilepsy at the age of puberty. Petit mal. Aura begins in the epigastrium. Pharyngeal spasm followed by desire to swallow.

Silicea, like *Calcarea*, is suited to scrofulous and rachitic subjects. The aura starts in the epigastrium; nocturnal epilepsy; feeling of coldness before the attack; the fit is followed by warm perspiration; feeling of great coldness on the left side of the body; exalted susceptibility to nerve stimuli; aggravation from over-exertion of the mind or from emotions.

Bufo rana is adapted to cases which have been brought on by sexual irregularities. The aura starts in the solar plexus or in the genital organs. The attacks are preceded by an irritability of mind, during which the patient talks incoherently. The convulsions are usually followed by deep sleep.

Artemisia vulgaris is indicated in cases arising from fright, and in which the fits come in groups.

Digitalis is highly recommended by Baehr,* who always exhibited a strong predilection for this remedy. He says it "deserves a prominent place in the list of anti-epileptic remedies, in all cases caused by onanism

* *Science of Therapeutics*, vol. i, p. 153.

or excessive nocturnal emissions. There is scarcely a drug that diminishes and even arrests nocturnal emissions with as much promptitude as this one. We have employed it in many cases, and always with marked success. We are in the habit of giving the alkaloid Digitaline, third trituration, one grain every two days. . . . The remedies that have likewise to be thought of in such cases are *Phosphorus*, *Phosphoric acid*, *China*, and *Nuxvomica*."

Causticum.—Petit mal; menstrual epilepsy, and epilepsy commencing at the age of puberty; nocturnal epilepsy with involuntary urination; convulsions, mostly on the right side; spasms of the pharynx followed by movements of swallowing.

Argentum nitricum is indicated by dilatation of the pupils, which precedes the attacks by several hours; restlessness and trembling of the hands after the attack; nocturnal epilepsy followed by debility; patient low-spirited.

The brilliant successes of abdominal surgeons have led to indiscriminate oöphorectomizing of epileptic patients, a practice that, so far as I am aware, has not been brought about with one cure, excepting in some few cases where there was severe ovarian disease, or in which the convulsions were *limited* to the menstrual period. I consider it a practice that should be condemned in unqualified terms to remove *healthy* ovaries for the cure of epilepsy and other neuroses. Practical experience of the best and most experienced gynæcologists and neurologists bears out this view. It is true that cases of cure have been reported in medical journals, but the reports have usually been made altogether too soon after the operation. No case of epilepsy can be considered as having been cured by an operation until two years have elapsed without a fit of any kind.

The general impression as to the prognosis of traumatic epilepsy treated by operation is decidedly incorrect. Books teach and physicians believe that a trephining in a case of traumatic epilepsy is tantamount to cure. No greater error was ever promulgated. A small percentage of traumatic epilepsies are permanently cured by trephining. Nearly all experience a temporary relief from the operation. This relief, however, is merely that which follows any surgical procedure done on an epileptic. I have taken the pains to read over the reports of a large number of traumatic cases operated, and I must say that the same degree of carelessness manifested in other reports would bring upon the author a well-deserved rebuke. Thus, I find an article headed: "Epilepsy of Ten Years' Standing; Trephining; Cure." Reading the article, I find that the convulsions had evidently occurred as the result of an old traumatism, probably a fracture; that the case had been trephined at the seat of fracture, and that up to the time of leaving the hospital there had been no recurrence of the seizures. It is surprising, moreover, to find that the men making these incomplete

reports are men of intelligence and learning. Occasionally, however, we find reports of cases really cured. While I have not analyzed the reports sufficiently to give statistics, I feel safe in estimating the proportion of cures of traumatic epilepsy at not over 20 per cent., and I would not be surprised if they did not reach 10 per cent. Results might be better if the cases were better selected; in fact, I am sure of it. In a general way it is a safe rule to trephine all cases at the seat of injury in which the relation of cause and effect between the injury and the epilepsy is well established. We have not much reason to expect a favorable result unless the convulsions present characteristics that indicate a local seat of disturbance. In every case we cannot be too careful as to how much we promise.

Sachs endeavors to account for the unfavorable results from trephining for epilepsy on the theory that a secondary sclerotic condition is set up by the injury. There is much to favor this view. He thus explains, I am satisfied, those cases of traumatic epilepsy which are apparently dependent upon a general cerebral disturbance.

Sachs's remarks at once raise the question of prevention of epilepsy after head injuries. If we cannot cure traumatic epilepsy, can we prevent it? I do not think we know enough to answer this question. It has been said, by whom I do not now just recall, that 50 per cent. of head injuries develop epilepsy in later years. I have before quoted this remark approvingly. More mature consideration leads me to doubt it; but the percentage is undoubtedly large. Let the figures be what they may, our course is the same. Every case of fresh cranial injury should be treated according to principles that will give the parts the best chances for perfect healing. I believe it to be a good rule to trephine all fractures where there is the slightest evidence of brain injury. There may be no depression of bone, but there may be a sub- or extra-dural hæmorrhage, attention to which is an important matter. On the other hand, one must not promise that trephining will certainly prevent epilepsy, for cases have been reported in which this simple operation itself has been the traumatism that apparently started up the disease.

Early operation should be performed as an exploratory procedure primarily. Secondly, it acts beneficially by relief of tension.

Aside from the traumatic cases, trephining has been recommended in certain types of epilepsy presenting a local origin. It has also been recommended as an empirical measure in idiopathic cases. All cures reported in the latter class are not satisfactory, the reports having been made too soon after operation. Sometimes most remarkable primary improvement occurs. This was well illustrated in a case recently under the care of Dr. Van Lennep and myself. The child had been having thirty to forty convulsions daily. Large doses of bromide given in order to suppress as far as possible the general character of the fits leaving the special character

still predominant, only served to reduce the number to fifteen or twenty daily. A trephining over the middle of the fissure of Rolando, on the side opposite to that on which the convulsions were most marked, was performed. In the two months after the operation the child had but two attacks, and they were within the first week or two afterwards. I do not know what the final result has been.

Jacksonian epilepsy is the form of the disease in which surgery has been offered as the sovereign remedy. Experience has not borne out the promise of good things made. Improvement has followed in most cases; but relapses have been common. The paralyses following the excision of a cortical centre have, in most instances, been temporary. The late histories of those cases in which I have been interested have not been what was hoped for. Every now and then one secures a brilliant success, and that, too, when least expected. In view of the serious outlook in cases untreated surgically, every patient having any prospect of cure or benefit should be given that chance.

Ligation of the vertebral arteries and other operations have been recommended, but have been abandoned.

There is one thing to say concerning operative treatment of epilepsy. So much is expected from the operation itself that nothing is done afterwards, to maintain the improvement. *This is a serious mistake.*

Thomson, of New York, has recommended the employment of a red-pepper pack as a therapeutic measure. It is supposed to produce general peripheral irritation and exert the same influence as major surgical operation.

Actual cautery applied to the head has not been without its adherents. Falling against a stove while in a fit has effected temporary cures.

Epilepsy undoubtedly sometimes recovers spontaneously. As I pen these lines a medical friend tells me of three cases which he knows were permanently cured by time, diet, and well-regulated habits.

One patient made a spontaneous recovery following a severe attack of cerebro-spinal fever. This recovery still persists after ten years.

In the preceding pages I have given my ideas as to the proper treatment of epilepsy. Let me say that they are the result of experience in managing the pick of obstinate cases. But few of them have been of recent origin.

Hysteria.

Authorities tend to express the view that hysteria and neurasthenia present clinical features so closely resembling each other as to make it difficult, if not at times impossible, to differentiate them. For therapeutic purposes, it is absolutely essential that we discriminate between hysteria on the one hand, and neurotic manifestations dependent upon visceral disease and neurasthenic conditions on the other. This I believe can nearly

always be done. Hysteria, strictly speaking, is not a disease, but a temperament, and *its successful treatment depends upon the successful application of suggestion*. Of course, all persons of hysterical temperament do not present symptoms sufficiently severe to demand the services of a physician. Nevertheless, any one who has much to do with the treatment of such patients cannot help noting that the disposition to exaggeration of symptoms is present whatever may be the nature of the illness. To manage such patients successfully, one is obliged to be positive and adopt every device to save the patient from her own imaginings. Neurasthenia, as its name signifies, is a nerve exhaustion, and is managed for the most part by applying the principles of rest. This subject will be fully considered in the succeeding section, which will deal with *Neurasthenia*.

The prophylaxis and treatment of hysteria demands correct ideas as to the etiology of the disease. As I have already stated, the hysterical temperament is the first factor. This cannot be cured; but it can be controlled; especially in young subjects. The various exciting causes which have been brought forward to explain the occurrence of the illness would be inoperative in normal individuals. Bad educational influences constitute a most important cause; indeed, it is the one which the family practitioner has within his entire control, if he will but assert himself tactfully and positively. The hysterical girl is taught by force of example to watch and magnify every unimportant ache and ill, and to direct mind to self; permitted to lead a life of selfishness without the pursuit of any praiseworthy aim or occupation, very slight emotional influences are sufficient to call forth the wildest hysterical manifestations. As to these emotional influences, they may consist of real or fancied disappointments—altogether too often the latter only. An unhappy love affair, a mesalliance in marriage, the ordinary vexations of home life, loss of money and friends, or a single false step, is sufficient in those predisposed to light the disease into activity. One does not always succeed in discovering the existence of these causes, even when present, unless he has fully gained the confidence of his patient. To win such confidence, one must possess himself of experience and tact in the management of hysterical patients. Then will he be convinced of the importance of moral and emotional causes in the production of this protean disease. No case has been thoroughly examined unless these causes have been searched for. Unfortunately, these causes are rarely such as may be removed. On the other hand, they are sometimes of such a simple character that sensible advice on the part of the practitioner, either direct or through the medium of a parent, will prove effective.

In the formulation of a plan of preventive treatment for the predisposed, one can very readily go to extremes, especially if the near relatives are, as nearly always happens to be the case, morbidly solicitous con-

cerning the many little woes of which the patient complains. Extravagant attention to these only serves to intensify them. Again, the nervous system should be educated out of its morbid sensitiveness to every slight external impression. This may be done by the avoidance of enervating influences, as too luxurious and aimless a life, and the adoption of a course involving moderate exposure. Here, again, another extreme stares us in the face, for by too much exposure, too hard a life, hysterical troubles may be brought on. The principal point, however, is found in the education of the child, so that a career of self-control and usefulness to self and others is learned.

Akin to emotional causes are depressing agencies. Thus, excessive devotion to work is not an infrequent cause of hysteria in those of neuro-pathic constitutions. Especially is this true when the overwork has been combined with worry and anxiety. Asthenia following acute illnesses, *e. g.*, typhoid fever, or resulting from insufficient or improper feeding, is in many instances the sole cause.

There is no definite relation between the state of the general health and the generation of hysteria. The disease occurs many times in those apparently strong, and it attacks the anæmic and cachectic. Naturally, hysterical symptoms appear in the debilitated, when the predisposition to the same exists. Those inclined to hysteria exhibit certain psychical peculiarities. For the most part, they are people of lively disposition, subject to powerful and changing emotions, and possessed of but little force of will. Aside from these mental abnormalities, they are often persons of considerable natural ability, and are practically always possessed of a most intense egotism.

No consideration of the prophylaxis of hysteria can be complete without reference to its alleged relationship to utero-ovarian disease. Thirteen years ago I wrote my views on this subject in Goodno's *Practice of Medicine* (Vol. I, p. 768 *et seq.*), and extended experience has served only to strengthen the opinions then advanced. Those views are the ones now commonly held by broad-minded gynæcologists and surgeons, but are by no means accepted by a subordinate class of operators who may well be called pseudo-gynæcologists. That the latter are continuing to do harm, I know full well by the many cases of neurotic young girls who have been unsexed by their too ready knives. Writing in 1894, I said: "In former years hysteria was regarded by all as a disease of the female generative system, an opinion that gave it the name by which it is generally known. Recent clinical observations show most conclusively the fallacy of such notions, and assign the cause of hysteria to the nervous system. In favor of the utero-ovarian origin of hysteria are the following statements: In many instances, an alleged ovarian tenderness is present, aggravation of which by pressure is sufficient to bring on a paroxysm; during paroxysms

ovarian pressure sometimes puts an end to the seizure; the existence of utero-ovarian disease in a very large percentage of the cases; the alleged cure of the hysteria by oöphorectomy or other surgical operations on the genital organs; the cure of hysteria by the use of pessaries and other local therapeutic measures. The so-called ovarian pain is by no means a proof of ovarian disease. Commonly present in hysterical cases, it exists even in those in whom the ovaries have been removed, and has been observed in the usual position when bimanual examination demonstrates the corresponding ovary to be elsewhere. In very many cases it is not pressure on the ovaries alone that is sufficient to precipitate or put an end to an attack, but pressure in quite widely separated localities has a like effect. The improvement following oöphorectomy and other surgical operations is not proof of the special value of those procedures. It must be remembered that this operation is one involving a profound moral effect. Owing to the magnitude and danger of the operation, the patient is secluded from her friends. The latter, moreover, entertaining a profound respect for the danger of a major surgical operation, obey the surgeon's injunctions to the letter; the patient is kept at absolute rest for a prolonged period, and for some time following the operation is subjected to certain rules of living. Her mind is taken from her nervous symptoms and made to dwell on an actual physical condition, and so improvement takes place. No less injurious are the minor gynæcological procedures. Directing as they do the patient's mind to a portion of her body which is in the main a mystery to her, they afford a source of more or less constant worry, and not infrequently provoke hysteria, when a little rest or sound advice might have acted as a preventive. So strongly rooted has become popular prejudice in favor of disorders of the genital organs as a cause of nervous affections, that much harm is being daily, I might almost say hourly, done by gynæcologists, *i. e.*, by men whose main acquaintance with the domain of medicine is confined to a *partial* knowledge of the pelvic viscera of women. I might also speak in stronger terms, and say it is my firm belief, founded on not a small experience, that more harm has been done by this unfortunate gynæcological superstition than there has come good from the wonderful advances in abdominal surgery. I have seen epileptics robbed of their ovaries on the slightest pretext; I have seen others with the same disorder promised a cure on the repair of a lacerated perinæum or dilatation of the cervix; I have seen young girls made morbid by the knowledge of a slight version or flexion, as if the uterus were any more likely to be straight than is the nose, or more accurately adjusted as to position than are the media of the eye as to refraction. I have just returned from seeing a case of far-advanced locomotor ataxia with absolute blindness from atrophy of the optic nerves, the entire treatment of which, to date, has been gynæcological at the hands of profes-

sors in the foremost allopathic colleges in the country. Let me recount cases arising from injudicious local measures. A so-called estimable woman, worrying over her single fall from virtue, became nervous. Her physician discovered the cause in a certain uterine cervical disease which he promptly treated. This served only the more to intensify her worry, and direct attention still more strongly to the organs which she had misused. She became insane. A young girl suffering from melancholia made a very rapid improvement under proper moral and medicinal treatment. Her physician, yielding to the solicitations and superstitions of lay scientific (?) friends, began an investigation of the genitals, and discovering a uterine displacement instituted local treatment for the same. Immediately the poor child's attention was directed to a portion of the body of which she had hitherto been in ignorance, and her suffering mind once more broke down. Removal from home to a hospital became necessary. A complete cure without local treatment ensued. My gynæcological friends will tell me that the character of my practice is such that I see only their failures. I can retort that I see many of their successes so-called, successes which from a neurological standpoint are rank failures; cases still persisting in the delusions of their physicians, namely, that the beginning and end of women's ills are the uterus and ovaries. I can, on the other hand, point to successful treatment of hysterical patients presenting marked utero-ovarian symptoms without other than constitutional and moral treatment. On this subject no men are better qualified to judge than Goodell and Playfair—both of them widely and favorably known as practical gynæcologists, highly educated in general medicine, and of sufficient force of character to acknowledge the errors of the past and teach principles inculcating advanced methods. What is more surprising is that the superstition at which I have been inveighing has been so largely taken up by our homœopathic gynæcologists; indeed, by homœopathic physicians generally. The very principles of our school provide for constitutional predisposition as the cause of very many local disorders, and yet they run to the other extreme of finding a local cause for constitutional troubles, too often seeking the same in the uterus. Those afflicted with special forms of mental astigmatism are just as liable to find the cause in the eyes, ears, nose, throat, heart, etc. Truly, false specialism has run mad in the land!

"While thus decrying against indiscriminate special treatment in the hands of injudicious gynæcologists, oculists and others, I do not wish it to be understood that I advocate the other extreme, that of avoiding treatment directed to special organs. Whenever the uterus, ovaries, eyes, stomach or other viscera show objective lesions, *i. e.*, conditions other than neurotic, they should receive careful attention. At the same time such attention should be given with due care, lest the patient should be made morbid in that particular direction."

Since writing the above, I have seen additional evidences of the force of what I then said. As I write, I have under my care a young woman but twenty years of age, whose ovaries were removed for some cause or other, and who is passing through the post-operative climaxis with a set of symptoms that make life a burden. I have seen two cases of excessive indulgence in tea-drinking which had been ordered to the operating table for double oöphorectomy, both of which have made excellent recoveries without resort to operation. It would not be a difficult task to multiply examples, many of them showing up the operating craze in such a light as to savor of the ridiculous.

On the other hand, it has also been my good fortune to see some cases where real disease existed, the removal of which by judicious operation greatly helped nervous manifestations.

Collins,* speaks of the gynæcological relations of hysteria as follows: "If there is any one specialist more than another whose aid and counsel should not be sought in the treatment of hysteria it is the gynæcologist. It seems an unnecessary platitude to say that hysterical women are as liable to uterine disease as non-hysterical women; but they are not more so, except in so far as the asthenia oftentimes associated with hysteria may predispose to slight displacement or disturbance of function. When such uterine disturbance occurs, naturally measures should be taken to overcome it; but in no case should there be any treatment from a gynæcological neurological standpoint, or any concerted action of the neurologist and the gynæcologist. The same punishment should be meted out to the man who wilfully removes a normal uterus, ovary, or testicle, or one not so far diseased that it cannot be nursed back to a normal condition, as is judicially given him who premeditatively takes deliberate aim and maims with weapon of any sort a fellow creature. In the light of comprehensive knowledge of reports of cases of hysteria and hystero-epilepsy cured by surgical procedure upon the generative organs, I say, that I refuse to believe that one example of pure hysteria has been cured by such barbarous unscientific, unrighteous measures."

The curative treatment of hysteria depends largely upon the extent to which the disease has developed, and the unwholesome character of the patient's surroundings. In all cases, mild or severe, the personal qualities of the physician constitute a very important factor. Some physicians possessed of the highest scientific ability are so decidedly lacking in these qualities as to make success with them exceedingly doubtful. Others less skillful, by reason of their possessions achieve successful results with but little labor. Some possess these qualities by nature; others acquire them; and still others are so deficient as to ever remain failures. Tact, firmness and

* *Treatment of Nervous Diseases*, p. 434.

positiveness on the part of the physician are ever necessary. He must exhibit a confidence in his resources to imbue his patient with confidence in him. He must be unflinchingly firm in his demands that his directions be carried out. It is sometimes necessary that he be actually cross, *but with all he must ever be a gentleman*. To scold and rail at the patient because of her wails and woes rarely accomplishes one iota of good. Sometimes by his intuitive knowledge of human nature, the physician is enabled to reach the patient by awakening an emotion to arouse her from her life of selfish invalidism. To illustrate the effects of emotional agencies in the care of such patients, I may relate a case, counterparts of which are doubtless familiar to all. A lady had been for years a bedridden invalid. Physicians had been in attendance for years without giving the desired relief. Her faithful husband was finally taken dangerously ill with an acute fever. Immediately she was enabled to arise from her bed; she nursed him through a dangerous illness, and on his recovery she remained well. A severe fright has cured other cases; and still others have recovered by reason of wounded pride. To utilize the foibles of female human nature for therapeutic purposes requires a rare combination of skill and tact.

There is one thing which the physician should never do when consulted by a hysterical patient, namely, to pass the illness off as mere nervousness and dismiss the case with the advice, "Forget it." Just as certainly as such advice is given, will another physician be consulted. Fanciful though the patient's ails may be, she is nevertheless sick, and requires help. If she cannot get aid from one physician, she will get it from another.

There is a large class of mild hysterics who constitute important parts of the clientele of the majority of successful physicians. These patients complain of various symptoms from time to time, and as they feel disposed, consult their medical advisers. The personality of the physician together with his advice and prescription tides these patients over, and prevents them from becoming ever being classed as anything worse than persons of nervous temperaments.

The treatment of special symptoms in hysterical patients must be carried out with care lest it be overdone. As a rule, when such symptoms are of purely nervous origin, they are better judiciously ignored. When dependent upon complicating factors, attention to them is necessary. Even then the general condition of the patient must be borne in mind. Any actual local trouble should be removed. When, depends not only upon the case, but also upon the plan of treatment proposed. As a rule, unless the inconvenience produced by them is very obtrusive, they had better be let alone until the general state of health has improved, for it will very often be found that they disappear spontaneously as it were, under constitutional treatment. Especially is this advice applicable in severe cases in which nervous prostration is extreme. Above all things radical surgical

operations, whether in the domain of general, orificial or gynæcological surgery, should be postponed. And again they should never be done unless there are distinct objective or subjective phenomena arising from them, and which would *per se* indicate the operation, were the nervous manifestations absent. It has been claimed for "*occult*" surgery that the best results are attained in cases in which local lesions have given rise to no direct symptoms. It is more than probable in such the local lesions have been small or mythical, and the operation for their relief correspondingly mild and involving no surgical shock. Consequently, the patient gets the moral effect of a surgical operation and the rest during convalescence from the same.

Any and all conditions involving waste need prompt attention. Hæmorrhages of all kinds must be controlled promptly. Vomiting must be checked. The most efficient agent for this latter symptom is the stomach tube. Sometimes, however, it fails.

It is unwise to resort too early to the catheter in **hysterical retention of urine**, as patients soon become accustomed to it and demand its repeated introduction.

It is bad practice to treat **hysterical spines** by supports and orthopædic apparatus of various sorts. They sometimes do good by the psychical influence they exert, though they almost invariably intensify the very trouble they were designed to relieve. Concerning this particular class of cases, I can well recall a case treated by me about fifteen years ago. The young woman had been fitted with a very heavy spinal brace by the previous medical attendant. Following my examination, I tossed the brace aside and requested the patient to get dressed. This was done without any idea of treatment by suggestion. The patient's mother told me years afterwards that my indifference as to the merits or needs of the brace exerted a marked psychical effect on the patient, and was largely instrumental in her rapid cure.

In cases of morbid sensitiveness of the **eyes and ears**, it is not advisable to cater to the symptom by ordering dark glasses and cutting off all sounds. The sensory hyperæsthesia is not lessened thereby. On the contrary, it is nearly always increased. When patients are found thus treated, it is well to withdraw the glasses in the one case and the dampening of sounds in the other. Such advice may appear cruel, but it is wholesome.

Hysterical **anorexia**, when at all pronounced, is a very difficult symptom to control. Nevertheless, it may be readily relieved by energetic means or measures that act by suggestion. Of course, it must be regulated by the patient's condition, for in some instances the abstinence from food has led to extreme emaciation and prostration, which will require all our tact and skill for their relief. In such we almost invariably find it necessary to enforce the rigid rest and isolation treatment to be hereafter described. In

those who are not so exhausted, we find rectal alimentation or feeding by the stomach tube very efficient.

Hysterical **tympanites** often reaches such an extent that it well deserves the name of "ballooning" of the abdomen. The distention is due to the involuntary swallowing of air. With some patients the difficulty may be controlled at once by a simple explanation of the facts. In the majority, however, nothing can be done, if the symptom is at all severe, without isolating the patient and placing her under a tactful nurse. When, as is frequently the case, the distention leads to the suspicion of tumor or pregnancy, we should negative this idea by examining the patient under anæsthesia with and in the presence of a member of the family. Some cases yield very promptly to faradism of the abdominal muscles.

Hysterical **pains** are best treated by teaching the patient to disregard them. Give her to understand distinctly that they possess no significance other than the suffering they cause her, and that it is better to disregard them while paying full attention to the systemic condition. When hysterical pains are comparatively mild, and occur in an ambulant patient, the best plan is to prescribe some remedy, in a confident though unobtrusive manner, and direct the patient to go about her duties regardless of their presence. This may be a difficult, a well-nigh impossible task at first, but if the patient is taught perseverance, she will eventually conquer them.

Convulsions are best treated by making a powerful physical impression. Judicious neglect on the part of attendants is here sometimes valuable. Sometimes the attacks may be checked by pouring ice-cold water over the patient. This treatment has the additional advantage of giving the patient something to think about when she comes to and finds the clothing and bedding saturated with water. In severe cases, the hypodermic administration of one-twelfth of a grain of *Apomorphia*, as recommended by Gowers, brings the contortions to an end. This drug produces vomiting within a very few seconds after its administration, and, with the onset of vomiting, the spasmodic symptoms subside.

Paralysis almost invariably demands that the patient be treated by isolation, otherwise the interference by relatives will counteract the suggestive methods of the physician. No hard and fast rules can be given for the management of these cases, for they constitute the most obstinate of the hysterical stigmata. Usually faradic or static electricity together with the general treatment will cure. Just how the physician shall manage his treatment by suggestion will depend upon the peculiarities of the patient and her illness.

Aphonia may be very successfully and promptly relieved by faradization of the larynx or by etherizing the patient in as bungling a manner as possible. The latter usually starts the patient to screaming. It is barely possible that the same measure may be efficient in cases of hysterical paralysis, as it will excite the patient to struggle energetically.

Hysterical **contractures** are very difficult of control in the majority of cases. Once in awhile we see a case in which the functions of the limbs are regained under treatment within a few days. In the more severe, the symptoms continues indefinitely, and then under some suggestion disappears rapidly. Cases of long standing require anæsthesia and breaking up of adhesions.

The above are but a few of the many hysterical manifestations which may come under medical supervision. Of the others, it need but be said that they are as many and as varied as the leaves of the forest. Their mention in any text-book, however complete, is therefore impossible. Of their treatment be it said that in all instances those measures which appeal to the patient's imagination and secure the confidence of the physician will be successful.

Sexual indulgence is never necessary as a therapeutic agent. Illegal gratification of the sexual appetite should never be countenanced by physicians, for a life of continence is consistent with health. The advice to get married must be looked upon with disfavor, unless a companion with whom the patient can live in love and happiness has been already selected. As one writer, whose name I cannot just now recall, has happily put it, a wife or a husband must be regarded from a higher standpoint than a therapeutic agent.

Sexual excesses are far more liable to do harm. In fact, if one is to err in giving advice on this point, it should be on the side of a high standard of morals, and counsel moderation rather than overindulgence. It may happen that the frequency of indulgence is not at fault, but the manner of gratification. There are many ways of violating sexual hygiene.

The treatment of hysteria by seclusion, rest, massage and electricity was first proposed by Weir Mitchell a number of years ago, and is often spoken of as the "Weir Mitchell treatment." As ordinarily understood by those not using it, it consists of a number of hard and fast rules to be applied in routine manner to every case. As practiced successfully it includes a judicious combination of these various agencies. Even the selection of the nurse is a very important matter, for the best directed efforts can be rendered futile, if the attendant is not adapted to the case in hand. Speaking on this point, Mitchell observes: "In choosing a nurse remember that if she has no tact or has a short temper, or is clumsy, or unneat, you may have your case spoiled, or be forced to change the nurse midway in your treatment; but at all events never hesitate in this. If the patient and nurse do not agree, make a change, and if need be, another. I cannot enough emphasize this matter of the nurse. Put yourself in the place of the nurse. Put yourself in the place of an intelligent lady shut up for two months with a coarse woman, whose talk and habits disgust, and doubly disgust, because the victim is emotional and sensitive by nature and habit,

and you will realize the need for care in your choice of an attendant. Mere technical training will not answer, and I have seen an utterly untrained woman of good brains and tact win successes which are sometimes denied to the best educated nurses, who lacked those ever-needed moral qualities which no training and no length of experience will give to some women."

Isolation is necessary to some extent in all cases. In severe ones, it must be carried to the degree of removing the patient from all friends and relatives. In others, it is only advisable to remove her from certain ones whose methods and actions tend to intensify the hysterical habit. These parties are often the ones whose companionship is most desired by the patient. Even the receiving and writing of letters is dangerous. It is this isolation to which patient and relatives most strenuously object when the "rest treatment" is proposed as the one measure for their cure. It involves nearly always removal from home and the breaking up of accustomed associations. In some few cases, residence at a resort in company with a proper nurse to supervise and direct her daily life untrammelled by the criticisms of anxious relatives is all that is needed. In still others, when the hysterical element is not predominant and the neurasthenic features are well defined, rest at home may prove successful. When removal from home is decided upon, the character of the place selected is important. It should never, when it can be avoided, be a general hospital, for the presence of other patients, the frequent surgical operations, and the odor of antiseptics and ether generally work injury. It should be a boarding-house or establishment arranged for the reception of just this class of cases. Sanitariums are rarely advisable, for so far as my observations go, they are generally managed so as to foster attention to minor ills of the neurotic, and in the end intensify hysteria. Patients are too apt to get together and hold converse over their ailments—an evil altogether too common in every community—and this must have a bad influence. All rest establishments are not equally well conducted. Those in which the management looks more and more to home comforts and homelike surroundings, and less to the atmosphere of the hospital or sanitarium, should be chosen when available.

The next element in the treatment is rest. In most marked cases this should be absolute at first. The patient should be kept in bed, forbidden to exert herself excepting to the extent necessary to perform the necessities of life. It may indeed prove desirable to forbid her rising for any reason whatever, compelling her to use the bed-pan for stool and urine, and have her fed by the nurse. These severe cases require usually a course of from six weeks to two months in bed. When the time to permit them to get up arrives, it should be by degrees. At first they should sit up in bed during meals; then they should sit up each day long enough to

have the bedding changed; and finally permitted to remain up for fifteen minutes three or four times daily. Then walking should be attempted, small efforts being made at first, increased in duration from day to day.

Some cases require restricted rest only from the beginning. These include cases in which the love for the couch or the bed is already too great, and in whom a course of absolute rest will be regarded with altogether too much satisfaction. Other cases are not sufficiently ill to require the absolute rest. In these cases, the best plan is to order the patient to remain in bed until an hour or so after breakfast; and to take one hour each of absolute rest in bed after dinner and after supper. This course should be followed for some time after convalescence has been established. In fact, it is a question if these nervous invalids even when restored to health should not keep a certain hour each day sacred for rest purposes for all time to come.

As soon as possible the patient should be gotten out in the open air. At first it should be attempted in the carriage; later by walking. The time spent in these occupations should be fixed by schedule for each case. Even before sufficient strength to go out is gained, the beneficial effects of out-door air may be obtained by having the patient dressed for the street, at an open window, one exposed to the sun being preferred.

Massage should be performed, when possible, by a professional masseuse. The greatest care should be exercised in selecting one. She, as well as the nurse, must be a woman of tact and discretion. Going from house to house gives her the temptation and opportunity of spreading gossip—an evil habit that cannot be too severely condemned. She must avoid any conversation concerning the ills of the patient or of others; and she must avoid all discussion concerning the merits of the treatment. The best time for her visits is in the middle of the morning; but as she cannot attend to all her cases at that hour, arrangements should be made for a regular time each day. To secure efficiency of service, unless the ability of the masseuse be known to the physician, the latter had better see her give one or two treatments. Playfair suggests, however, that one can judge best of the efficiency of her work by the way the patient takes food. If she eats and relishes the desired quantity, he is satisfied that all is going well. For economical reasons it is sometimes necessary to leave the manipulation to the nurse. The character of the massage in these cases is such that it can be readily performed by any intelligent healthy person. Usually, however, the nurse has enough to do in the management of the case without imposing this duty on her. The idea of massage is to secure the nutrition changes obtained by exercise without exposing the patient to exertion. At first there is sometimes some difficulty in the beginning. Patients think the manipulation does not agree. It is well to have the first sitting quite short, say twenty minutes. On successive days the treat-

ments are lengthened until, finally, the patients get one full hour of massage daily.

The electrical treatment is carried out with a two-fold object. First, for the relief of special symptoms, in which cases the ordinary rules of electro-therapeutics are used as guides; and, secondly, as an aid to massage, in giving the patient sufficient exercise. For the latter purpose the slowly interrupted faradic current is used, each muscle of the body in turn being treated and made to contract several times. This electrical treatment may be omitted when circumstances do not favor it; that is, when the nurse is not skilled in the use of the battery. It rarely happens that the physician has sufficient time at his disposal to personally carry out the treatment.

Last, but by no means least, comes the diet. This should be conducted with the view of getting the patient to partake of as large quantities of food as possible. Beginning with the first days of the treatment, milk is occasionally made the sole article of diet, administering four ounces every three hours. Other patients are required from the beginning to take three full meals with a certain amount of nourishment, generally in the form of milk between times. As to the articles which go to make up these meals and the luncheons, the fancies of the patient should be largely consulted, unless she is decidedly whimsical and inclined to ask for outrageously improper food. With those patients who begin with an exclusive milk diet, solid food should be ordered in the course of three or four days, gradually increased in quantity until at the end of the first week, when three full meals are to be given. Some patients will declare positively that milk disagrees with them. In the vast majority of such, the idea is merely notional and nothing more. I have succeeded in assuring some of these that if the milk be thoroughly shaken it will agree perfectly. The milk can be given if not in one form, then in another. It may be given plain, mixed with Vichy water, with lime water, with Bicarbonate of Soda, or in the form of koumyss or peptonized milk. Liquid beef preparations are valuable aids to nutrition. The manufactured peptones, etc., are not to be thought of in this connection, but instead home-made soups should be used. Of these the raw beef soup of Mitchell, or a beef extract made after the manner to be shortly described, is the best. To make raw beef soup one pound of good beef is chopped fine and mixed with a pint of water, to which five drops of pure Hydrochloric acid have been added. This is permitted to stand over night in the refrigerator. In the morning it is placed on the range and subjected to a heat of 110° for two hours. This quantity is to be divided into three portions and administered at appropriate periods during the day. It is, of course, seasoned to suit the taste. The flavor of the raw meat is sometimes objected to by the patient. In this case the meat is made into a ball and broiled superficially, after which it is

subjected to the process already described. Another method of preparing a beef extract is as follows: A suitable piece of steak is broiled very superficially. It is then cut into small pieces and put into a beef compressing apparatus. The juice thus extracted is administered after proper seasoning.

Constipation in patients taking large quantities of food is a serious matter, and must be avoided. In some cases, the taking of a cup of coffee the first thing in the morning without sugar or cream overcomes this difficulty. In others medicines are necessary. Nothing is better than Aloin pills or Cascara, used, of course, as a temporary expedient during the dieting.

The rest treatment as thus described usually takes up so much time that the monotony of life is avoided. Still, opportunities will be found when the nurse should entertain the patient by reading to her. The character of the literature selected should be a matter of some thought. Trashy novels containing sensational matter should be avoided. Standard literature only should be chosen. Sometimes carefully selected reading from the daily papers is best. In selecting reading matter, the character of the patient's education and the tendency of her thoughts should be considered. Perhaps short stories by standard authors are the best suited to most patients.

The daily schedule of the patient undergoing the rest treatment, as advocated by Mitchell, is as follows:

Cocoa at 7 A.M.

Cool sponge bath, with rough rub, and toilet for the day.

Breakfast at 8 A.M., with milk.

Rest an hour after.

Eight oz. peptonized milk at 10 A.M.

Massage at 11 A.M.

Reading aloud by nurse, half-hour.

Dinner at 1.30 P.M.

Rest an hour.

Eight oz. peptonized milk at 3.30 P.M.

Electricity at 4 P.M.

Supper at 6.30 P.M., with milk.

Rest an hour.

Reading aloud by nurse, half an hour, 8 P.M.

Light rubbing by nurse with drip sheet at 9 P.M.

Three oz. malt extract with meals; tonic after meals.

Eight oz. peptonized milk with biscuit at bedtime, and a glass of milk during the night if desired.

Laxative (cascara).

Later, Swedish movements are added after the massage.

This schedule must not be regarded as one fixed for all cases, nor,

indeed, for every day for the one particular case. It must be regarded as a standard from which departures are to be made according to special demands of the case in hand.

Many cases cannot be removed from home for treatment. In such a course of treatment in which moral training enters largely should be followed. Especial care should be taken to prevent the patient's association with persons who have a manifestly bad effect on her and her illness.

In the practice of the rest treatment, the greatest judgment is required in determining the amount of rest and seclusion required. With some the simple act of placing the patient under the care of a proper nurse is all the exclusion needed; in others it is necessary only to send the patient away from home to some resort, where not too many invalids are congregated. There are cases, too, in which rest can be greatly abused, cases requiring activity instead of idleness.

Medicines.—Owing to the readiness with which hysterical patients respond to suggestion, it has for a number of years past been the custom to speak slightly of the medicinal treatment of this disease, and to lay particular stress upon the general management of the patient. While this is all right so far as the care of the patient is concerned, it is certainly unfortunate, for the experience of most of us has demonstrated that we do get some results from drug treatment, perhaps more than we are aware of. Certain it is that the patient has faith in drugs; equally certain is it that we will make dismal failures by dismissing the patient after speaking slightly of medicines. I believe that with a wise conservatism in the use of medicines, we will accomplish much more than without their aid.

Ignatia stands at the head of the list of hysterical remedies. This position it merits by reason of its symptomatology. No remedy has better developed it than the *globus hystericus* or the characteristic headache, which has been compared to a sensation as of a nail driven into the head (*clavus hystericus*). Following the seizures, there is a profuse flow of urine of low specific gravity. *Ignatia* is one of the important remedies for the convulsive manifestations, being indicated in a very large proportion of truly hysteroid seizures. The mental condition of the patient is very uncertain, being characterized by alternate periods of laughing and crying; she is of a very emotional temperament. The etiology of the *Ignatia* case is grief, which the patient is very fond of nursing.

Moschus.—This remedy is adapted to cases of hysterical fainting, when the same are not dependent upon mal-nutrition, and especially if associated with spasm of the larynx. The spasms in which it is indicated are of the tetanic character. Hysterical symptoms are often due to great accumulation of gas in the stomach and bowels. Special symptoms calling for it include profuse pale urine, *globus hystericus*, headache, violent eructations of gas, uncontrollable laughter, alternation of moods, sexual desire in-

creased even to nymphomania, hiccough, and bad temper. Musk was at one time a favorite remedy among old-school physicians for various nervous phenomena, but it has fallen into disuse, probably because of its great expense. As used by them for hysterical phenomena, it was given in doses of ten to fifteen grains, the effects of which usually continued for six hours.

Asafœtida may be used for both sensory and motor symptoms. It is very successful for an exaggerated sensibility, and will often be very beneficial in patients of hysterical temperament who complain of injurious morbid sensations which are brought on by slight external causes. Like Moschus, it is an important medicine for accumulation of gas in the abdomen. It will be found of use in the functional spasms and nervousness. This remedy is likewise used largely by the old school, usually in doses of three to six grains of the crude drug. As a palliative in flatulence it may be administered as Milk of Asafœtida in doses of one to eight fluid ounces by the rectum. Peristalsis is reversed in the Asafœtida case, hence the gas seems to press upwards and causes oppression of breathing. It is our principal remedy for hysterical colic.

Valerian.—The sphere of this remedy is best described by Dewey. "The patient must keep continually on the move; but exertion causes headache, and the slightest pain causes fainting. There is a sensation as if something warm were rising from the stomach; this causes a difficulty of breathing; there is also present fear, tremulousness and palpitation. There is a general state of nervous excitement; the patient is apt to be joyous, lively and talkative. A tendency to flushes of heat is often present. It also has the globus hystericus, and there are many pains simulating rheumatism. Nervous agitation is its most marked symptom, and this together with warm sensations rising from the stomach should distinguish. The alternation of moods which are prominent with the remedy should not be overlooked. It seems to be the remedy for the hysterical habit." * Old-school authorities use the drug on pretty much the same general indications as outlined by Dewey. Thus, Wood † says: "Valerian is useful in the state of unrest familiarly known as nervousness, is much used in the minor disturbances of hysteria." It is much used as the *Elixir of the Valerianate of Ammonia* in doses of one drachm, as needed. The taste of this preparation is by no means as bad as its odor.

Actea racemosa is indicated in patients presenting the temperament already described under Ignatia, but who complain of more or less constant infra-mammary pain. Uterine symptoms are very prominent, and include neuralgia and irregular or delayed menstruation. The hysterical attacks are characterized by delirium, in which the patient is loquacious, jumping from

* *Practical Homœopathic Therapeutics*, p. 175.

† *Therapeutics, Its Principles and Practice*, 13th edition, p. 75.

subject to subject without apparent connection ; sees strange objects ; sleeplessness and restlessness.

Pulsatilla.—The mental condition under this remedy is one of depression, but the patient inclines to weep in the presence of others and seeks sympathy. Changeability of symptoms is a prominent feature. The hysterical symptoms are apt to appear at puberty. Menstrual derangements—usually scanty and delayed menses—are common.

The remedies which are included under the *Solanaceæ* are all indicated in cases presenting more or less delirium. *Belladonna* presents a flushed face, boisterous excitement, full pulse, dilated pupils and evidences of cerebral congestion.

Hyoscyamus and *Stramonium* are rarely useful in pure hysteria. Their symptoms show them to be indicated when mania develops in hysterical women.

Sumbul was much used by Dr. A. M. Barnes for the acute attacks of hysteria. It is given in thirty minim doses of the fluid extract.

Potassium bromide is quite extensively used by some practitioners for the nervousness of hysteria, but is not a practical palliative. Its effects are not satisfactory, and if given in too large doses the unpleasant physiological effects of the drug are apt to be manifested.

Jousset gives the most complete *résumé* of the homœopathic literature of the therapeutics of hysteria* from which the following summary has been prepared :

Convulsive Form.—*Ether, Chloroform, Moschus* and cold water.

Hystero-Epilepsy.—*Calcarea carb., Causticum, Cuprum, Ignatia, Nux vomica, Cocculus, Tarentula, Belladonna, Stramonium* and *Hyoscyamus*.

Hysterical Melancholia with Suicidal Tendency.—*Ignatia, Conium, Calcarea carb., Arsenicum, Pulsatilla* and *Mercurius*.

Hysterical Melancholia with Homicidal Impulse.—*Arsenicum, Mercurius* and *Platina*.

Hysterical Restlessness.—*Ignatia, Tarentula, Hyoscyamus, Stramonium* and *Cannabis indica*.

Hyperæsthesia.—*Aconite, Belladonna, Nux vomica, Ignatia, Sepia* and *Tarentula*, if the hyperæsthesia is cutaneous.

Nux vomica, Ignatia, Plumbum, Pulsatilla and *faradism*, if it is myalgic.

Paralyses.—*Aconite, Arsenicum, Aurum, Mercurius, Hyoscyamus, Ignatia, Nux vomica, Plumbum* and *Kali bromidum*, if anæsthesia is the prominent feature.

Ignatia, Nux vomica, Cuprum, Tarentula, Cocculus, Plumbum and *Conium*, for hysterical paraplegia.

Contractures.—*Cocculus, Cuprum, Lycopodium, Mercurius, Ignatia, Zincum* and the *Solanaceæ*.

* *Practice of Medicine*, p. 341 et seq.

Rhythmical Chorea.—*Actea racemosa*, *Causticum*, *Chamomilla*, *Lycopodium* and *Tarentula*.

Pseudo-Meningitis.—*Cuprum*, *Ignatia*, the *Solanaceæ*, *Tarentula* and *Stannum*.

Lethargy.—*Belladonna*, *Chamomilla*, *Cuprum*, *Mercurius*, *Tarentula* and *Magnesium*.

Cough.—*Tarentula*, *Corallium rubrum*, *Cuprum*, *Ambra grisea* and *Viola odorata*.

Palpitations.—*Aconite*, *Moschus*, *Tarentula*, *Nux vomica*, *Platina* and *Hydrocyanic acid*.

Syncope.—*Aconite*, *Nux moschata*, *Cuprum*, the *Serpent venoms* and *Apium virus*.

Anorexia.—*Chamomilla*, *China*, *Cocculus*, *Conium*, *Ferrum*, *Ignatia*, *Dulcamara*, *Magnesium carb.*, *Mercurius*, *Muriatic acid*, *Aconite* and *Pulsatilla*.

Vomiting.—*Nux vomica*, *Graphites*, *Plumbum*, *Opium*, *Petroleum*, *Pulsatilla*, *Crocote*, *Sepia* and the *Iodides*.

Pseudo-Peritonitis.—*Belladonna*, *Veratrum* and *Colocynth*.

Tympanites.—*Taraxacum*, *Chamomilla*, *China*, *Lycopodium* and *Carbo veg.*

Neurasthenia.

An experience which is by no means a small one, leads me to assert that a diagnosis of neurasthenia hardly explains the nature of a case of this so-called disease. Many cases, perhaps the majority, are, as the name signifies, examples of "nerve exhaustion." Others, however, present very similar symptoms to those observed in the pure examples of the disease, but are nervous manifestation associated with some organic disorder or are the result of a chronic toxæmia. The physician who has had much to do with neurasthenic patients cannot help observing numerous types or symptoms groupings—groupings so characteristic that they cannot possibly be due to temperamental conditions or the vagaries of an exhausted mind. Again, when it comes to the study of the causative factors, we find these quite varied. In some it is overwork; in others, it is work not at all adapted to the individual; again, the work may not have been excessive for the average man, but it is not adapted to the particular patient; sometimes it is not the work at all, but the conditions by which the patient is surrounded. In very many instances, violations of the principles of sexual hygiene—either excessive or improper indulgence—is the foundation of the illness.

It is essential that the physician in treating any case of neurasthenia make a thorough examination at the start that he may determine the causative factors, the particular trend of the patient's symptoms, and the presence or absence of associated organic disease. Having decided in his own

mind that the case is one of what we are pleased to call neurasthenia, he should then determine the integrity of various functions of the body, as the digestive apparatus, the circulatory state (especially as to blood-pressure and circulatory stability), the sexual functions, and the working force of the nervous system. In all of his examinations he should be thorough and systematic, for a neglect of this precaution will forfeit the confidence of his patient, without which it is manifestly impossible to effect much improvement or cure.

Rest is the most important measure to be advised and enforced. Inasmuch as cases of neurasthenia present the greatest possible variations in clinical features, it is evident that the character of rest prescribed must vary with the case in hand. More than this, it is necessary that the physician study his patient carefully, discover his fondness for this or that hobby, his weaknesses in following out a line of treatment, and his adaptability for particular ways of resting, after which he should specify the life to be led. The current practice of ordering the patient away from home without supervising his daily life, permitting the patient to do pretty much as he pleases as long as he keeps away from work, will prove successful in but a small minority of cases, and these for the most part of mild character.

The term rest as applied to the treatment of neurasthenia is a very elastic one. In those of severe character and attended by loss of flesh, impoverished nutrition, etc., confinement in bed is absolutely necessary. The majority of these patients are women, who have been reduced to this condition by grief or misfortune, hard mental and physical labor, frequent childbearing, repeated illnesses, and excesses in social and household duties.

At the other extreme we have cases in which the term rest should be interpreted to mean "a change" from present conditions.

In the majority of bad cases, it is necessary only to enforce an absolute rest treatment for a couple of weeks only, after which the patient should be directed to get up an increasing number of hours each day, until finally rest is taken only at stated intervals and for limited periods, usually after meals. This stage having been reached, systematic graded exercises should be prescribed. In the beginning, walking is usually the only one available. Later, we may advise, according to the patient's means, riding, driving, golf, bicycling, etc. Walking would undoubtedly be the exercise of most value were it not for the fact that it is done mechanically, and the patient has every opportunity for letting the mind run riot on self. This may be avoided if the walk is taken with an object, and especially in the pursuit of some hobby, as gunning, fishing, photography, botany, etc. The prescription of exercise for male patients is a comparatively easy matter, for no matter how young or old they may be, it is always possible to find something they will enjoy or can practice without being exposed to the criticism of others. In the case of women, we usually have a difficult

problem, for whatever we propose the patient is ready with some sentimental objection to it. A man of sixty can play golf, bicycle, ride horse-back, go fishing or hunting, and be admired for his activity; but a woman of like age indulging in these pastimes is not unlikely to be criticized as being but little short of a simpleton.

The criterion of the value of a system of rest and exercise is found in the effects of the same on the patient's sleep, appetite, pulse frequency, blood-pressure, digestion, and activity of the bowels. He may assert that he feels worse for his indulgence, but such statements may be safely disregarded if we find his various functions, as above outlined, improved thereby; for ere long, we will find that he himself will acknowledge a feeling of well-being.

As to sending patients away for the sake of change of scene and for recreation, due consideration must be had for their condition of health. In the majority of bad cases it is usually necessary to keep the patient under close medical supervision for some little time, during which period a complete or partial rest treatment is enforced. In the case of men who have been broken down by business worries and anxieties, it is usually impossible to do anything with them while they remain at home, because they cannot keep away from "shop." In selecting a method of securing the necessary change we must have due regard for our patient's temperament. We have the choice of camp life in the woods, a stay in the mountains or seashore, an ocean voyage, traveling abroad, etc., etc. Foreign touring and ocean voyages have the advantage of taking the patient away from business annoyances. To those who are fond of the sea, a trip on a slow-going steamer gives abundant opportunity for rest. In prescribing these changes in the life of the patient, the physician must remember that rest constitutes a diversion of mental and physical activity from the usual channels. The student will find it best to lay aside his books and indulge in out-of-door recreation, or, in mild cases, simply change the character of his reading for the time. The business man may take up hobbies to distract his mind from business cares. The athlete must take physical rest. The character of the rest enjoined then must vary according to the patient's previous mode of life and the character of his symptoms.

As to gymnasium exercise, I must confess that I have but little faith in it, unless it gives pleasure to the patient. Otherwise, it is regarded as but a tread-mill or unpleasant task, to be finished as soon as possible.

Next to rest and "change" comes the question of *isolation*. There are very few neurasthenics who are not harmed by associations with certain individuals who are injudiciously sympathetic, or who are possessed of exasperating ways. As to the latter, I have twice worked complete cures in patients who were associated in business with men of exacting domineering dispositions, the favorable result following dissolution of partnership in

the one case and a change of employers in the other. In most of the cases sufficiently severe to demand an absolute rest treatment, it is *necessary* to isolate the patient from family and friends. I emphasize the word "necessary," because experience has taught me that such isolation is of the highest importance. Many times has it appeared to me that domestic surroundings were ideal, and that everything could be accomplished as well at home as away; and yet continued experience with the case has taught me that underneath the family calm were serious disturbing factors, which made home cure out of the question. In the majority of cases the disturbing element is the patient's selfish temperament, which forces all members of the family to yield to all his whims and fancies. The constant humoring which he gets only tends to increase his many imaginary feelings. Isolation removes this danger, especially if the patient is placed under the care of an experienced and tactful nurse. It also has the additional advantage of providing for a more complete change of surroundings, and removes some of the suggestions which perpetuate the old symptoms. I might even say that in many instances I have been unable to fathom the disturbing element until I had placed an experienced and observing nurse in charge. She being constantly on the scene usually unearths within a few days facts that would take the physician many months to discover.

Isolation, like rest, need only be relative in the majority of cases, it being necessary only to remove the patient from the influence of particular individuals with whom associations has been found to be pernicious; or we may feel that the exigencies of the case are satisfied if the patient retires at stated hours daily for rest in his own bed-room.

If, however, it is decided to take the patient from his home for the isolation mainly, the best place for him is in a private boarding-house conducted for the purpose of treating such invalids. Large general hospitals are unsatisfactory because of the more or less continuous excitement prevailing by reason of the close association with surgical cases. Private sanatoria are, as a rule, miserable makeshifts. They are patronized, as a rule, by a lot of half-cracked invalids, whose sole pleasure is to discover a new peculiar ache or ill, and are conducted by men whose main aim is business, and whose main stock in trade is some particular health hobby and unlimited self-assertion. It is not unusual for patients at these places to converse with each other concerning their sufferings (?), and this has a most demoralizing influence. Their main advantage lies in their relatively low cost—scarcely greater than that of an ordinarily good boarding-house.

The question of isolation or proper companionship enters into the arranging of details when patients are sent away from home for a prolonged period. Patients will insist that they can go alone, or that husband or wife or other relative will prove very suitable. In nearly all cases in which I have consented to this arrangement the result has been a dismal failure,

and money and valuable time have gone to waste. In the case of female patients, we should select a suitable nurse. With male patients, male nurses are rarely adapted to the case. My best results have been secured with the co-operation of a medical student or recently graduated physician, anxious to make some money during the vacation period, or before beginning practice.

Massage is a useful adjuvant to treatment in cases treated in their own homes, or when under the constant supervision of their physicians. Its value depends upon the fact that it utilizes an hour each day—time that might otherwise be spent in introspection and broodings. It should be understood, however, that it has no specific virtues. It simply affords a means for improving muscular nutrition, and aids the patient in taking a larger quantity of food than that of which he would be capable under ordinary circumstances. The manipulator employed must be a person of tact and of pleasant personality. Mere rubbers of vulgar personality and boorish manners should not be tolerated. If he is all that can be desired, his visits and treatments will have the additional therapeutic value of suggestion. If, furthermore, he is loyal to the physician, he can do much in the way of increasing the patient's confidence in his medical adviser.

The frequency of the seances must be judged by the effects. In the beginning of the treatment, it is usually advisable to have them repeated daily and for one hour at a time. The most desirable time for the application is in the evening, especially in patients with insomnia. Still, in this matter as in everything else in connection with the treatment of neurasthenia, each patient is a law unto himself.

Some patients, though these are very few in number, do not tolerate massage well. Under such circumstances, the treatments should be discontinued.

Various freak systems of manipulations have been exploited before the public from time to time. These can be truly said to possess no specific virtues or scientific advantages over the orthodox manipulations. When applied to suitable cases, they do considerable good more by reason of the self-assertion of their practitioners than from any special merits.

Electricity, like massage, is greatly overrated. Still, it is not without some virtues. It also serves to bring the patient into frequent association with his physician, it gives the impression of a tangible treatment, and thus helps the case by suggestion. The method of treatment must vary with the case. In the majority, the general faradization and central galvanization of Beard and Rockwell will prove advantageous. Static machines are, however, decidedly more impressive, and oftentimes accomplish wonders through suggestion. Special methods of treatment should be applied to combat special symptoms, as suggested in the section on electro-therapy in the treatment of nervous diseases.

When the general practitioner undertakes electrical treatment in neurasthenic cases, he should proceed in a confident manner, as if he felt himself to be the master of the subject. Half-hearted playing with switches, doubt in the selection of electrodes, and carelessness in details will impress his patient unfavorably, and rob him of good results. Again, let me suggest that when a patient shows a strong predilection for electrical treatment, considerable benefit may be derived from its application. Even though it be not indicated scientifically, it will act favorably by suggestion.

Suggestion is a great point in the treatment of neurasthenia, as it is in hysteria. The reputable profession has thus far failed to take full cognizance of its value, though mentally acknowledged by us all from a standpoint of theory. It is the means by which Christian scientists and the exploiters of various quack medicines operate. Conducted within the limits of decency and common sense, there is no reason why it should not be utilized by us. Undoubtedly we all treat by suggestion to a certain extent whenever we make a prescription, though the psychical element is subordinated or forgotten by us at the time. I can name dozens of physicians who have special methods of treatment for certain conditions, and who express unbounded faith in their remedies; and yet when that self-same treatment is applied by another physician, it fails. Why? Because the remedy is not given with the peculiar self-confident manner with which it is always prescribed by the originator.

Neurasthenics often think that they require a change of climate. **Climatotherapy** can have no place in the treatment of this disease excepting in favoring a life in the open air and acting by suggestion.

Diet is a subject which always demands careful consideration, not, however, as is ordinarily believed by patients and many physicians, with the object of securing an easily digestible *menu*, but for the purpose of bringing general nutrition up to the highest possible standard. Nervous patients, as a rule, thrive best on a diet which consists very largely of animal foods and easily digested fats. The articles of the latter class to be advised include especially butter, cream, olive oil, and the portion of fat attached to the meats which they may happen to eat. It is also of the highest importance that the food be properly cooked and slowly eaten. When nutrition is decidedly below par, it is a good plan to order light lunches between meals. Some patients thrive better on a limited supply of meats or even on an exclusively vegetable diet. Even in the latter class one cannot be too careful lest the patient partake too freely of starchy foods, as the cereals and bread-stuffs.

Those who believe in a rigid dietetic treatment of neurasthenia hold to the theory that the disease is an auto-intoxication. Pleasant though this idea may be to the patient, it is often fraught with evil in practice, as it leads to the limitation of food-stuffs and the undermining of nutrition.

Of course, there are cases in which the toxic origin is undoubted, and in which diet must be limited, but they are infinitesimal in number as compared with the large class of neurasthenics. Whenever possible, such persons should be treated by free elimination, *e. g.*, by securing regular action of the bowels, and the abundant administration of pure water by mouth and by enteroclysis.

Sleeplessness is a common symptom among neurasthenics, and must be controlled at all hazards. If hygienic measures alone will not do it, we must have recourse to certain hypnotics. The two for which I must express my decided preference are *Veronal* and *Chloralamid*. The former will be found suitable to the majority of cases. In a rather large experience, I have never seen the drug form a habit, and it does not exert a cumulative action. The insomnia of neurasthenics is very frequently visionary, or it is due to the fear that they cannot get to sleep. The visionary cases can be recognized by careful observation, when it will be determined that the patient is awake but a very few minutes (if at all) during the night. Those who are fearful about getting to sleep can be first controlled by the regular administration of *Veronal* in capsule. After a regular sleeping habit has been induced, sugar of milk may be substituted for the *Veronal* in the capsule. I have one patient of this class for whom *Sulphonal* was prescribed. Later, Sugar of milk was substituted. Although ten years has elapsed, he still persists in taking his regular hypnotic (?), because he is fearful of lying awake, and he has supreme confidence in my statement that the *Saccharum lactis* will do him no harm.

Hydrotherapy is more valuable than any other physical method of treating the neurasthenic. While almost any hydriatric measure may prove valuable according to indications, there are certain procedures which are useful in the majority of cases.

The cold spinal douche immediately on awakening in the morning is highly invigorating. The patient should be directed to run a few inches of hot water into the bath-tub. He then sits on a board hung across the tub, while water from the cold water spigot is made to pour down his spine from the nape of the neck for fifteen or thirty seconds. He then rubs himself briskly with a coarse towel and dresses or returns to bed, according to the requirements of his case.

Regulation of the **sexual habits** is always of paramount importance. This oftentimes constitutes the most difficult portion of our problem. Indeed, it constitutes one of the excellent reasons why a neurasthenic patient should not go away from home in company with his wife. The manner of gratification must always be considered, as incomplete intercourse or other abnormal methods of gratification are universally recognized as harmful.

Among remedies, *Strychnia sulph.* is the most useful. It may be

given in doses ranging from $\frac{1}{200}$ to $\frac{1}{20}$ of a grain three times daily. When anæmia is present, it may be judiciously combined with iron.

Valuable as Strychnia is as a remedy, there is no remedy that has been more abused or more frequently failed of its purpose. There are certain cases of sexual neurasthenia in which it is invaluable when given in large doses, *i. e.*, grains $\frac{1}{20}$ three times daily, but it is essential that the patient be very carefully watched, lest there be produced a high degree of nervous irritability, which aggravates the pre-existing conditions. In the majority of cases, one secures the best results from the administration of $\frac{1}{200}$ of a grain at four hourly intervals. The large doses above mentioned is practically never required excepting in the cases presenting great sexual exhaustion. Its results are then increased by the simultaneous administration of Zinc phosphide in doses of $\frac{1}{10}$ of a grain. Respecting the Strychnia furor which has run riot for the last ten or fifteen years, I have often felt that physicians' confidence in it has been its mainstay in therapeutics. Of course, it is a good medicine, but it should not be made to occupy the position of "high trump" in the therapeutic pack.

Picric acid is also a very valuable remedy. It has headache brought on or aggravated by the slightest attempt at using the mind. It is generally situated in either the forehead or occiput. When in the latter situation, it extends down the spine. There are more or less constant tired and heavy feelings. The sensations of heat, so common in many cases of neurasthenia, are characteristic of Picric acid. Various visceral sensations are often present in the cases calling for this remedy. When spinal symptoms predominate, the *Picrate of zinc* 2x is a better remedy.

Phosphoric acid, though generally used in cases of sexual neurasthenia, is equally well adapted to cases arising from overwork. Both brain and spine are exhausted. A peculiar vertigo is sometimes complained of, namely, on lying down there is a feeling as if the head was going higher than the head. Seminal emissions are frequent. The genitals are cold and relaxed. Pains are absent. Profound mental and bodily weakness is the characteristic indication.

Zincum is frequently useful in cases originating in exhausting diseases, with backache and fidgetiness of the feet as prominent symptoms. Sometimes the patient complains of burning along the spine and formication in the calves and weakness of the extremities.

Two of the salts of Zinc are often useful in neurasthenic patients, namely, *Zinc phosphide* and *Zinc picrate*. The former is indicated in restlessness in exhausted individuals with sleeplessness, especially if the cause has been excessive sexual indulgence.

Phosphorus is indicated in cases characterized by irritability and weakness, oversensitiveness to all impressions; "the head is weak and the patient cannot think; there is burning in small spots, better from rubbing; the legs

are weak with numbness and coldness, and the sphincters are weak. There is a feeling as if the back would break on any motion."*

Anacardium is suited to cases in which defective memory is an important feature. The patient complains of a sensation as of a band around the head and driving pains in various muscles; wants to lie or sit continually; sensitive to drafts, catches cold easily; headache, dry throat, dyspepsia and other symptoms disappear during dinner, but return after a few hours.

Erythroxylon coca.—Nervous depression resulting from overwork; mental anxiety, sexual excesses or abuse of tobacco; weariness extreme; exhaustion of heart with irregular action of that organ; painful oppression of the chest and continued need of deep breathing; flatulence; constipation from inactivity of the rectum.

Epiphægus.—Neurasthenic anæmic headache; relieved after a good sleep.

Other remedies which may prove useful, and the symptomatology of which should be studied, are *Zinc valerianata*, *Selenium*, *Tarentula*, *Sumbul*, *Physostigma*, *Nux vomica*, *Kali phos.*, *Kali ars.*, *Cocculus*, *Gelsemium* and *Actea racemosa*.

There is a large list of nerve tonics, proprietary and otherwise, which have been much vaunted in the treatment of neurasthenia. Some of them, as those supposed to be rich in Phosphorus, *e. g.*, the Hypophosphites, are believed to act as nerve foods. As a matter of fact, they are rarely found to be of any avail. Others act temporarily to improve the patient's sense of well-being, and may be regarded as temporary make-shifts. In reality they are harmful, as they lead the patient to work excessively under the stimulus of the remedy. He would be much better off if he did not take the stimulants or palliatives, and remained away from his work.

Convulsions.

The treatment of patients presenting convulsions as a symptom resolves itself into measures to be directed against the relief or suppression of the convulsions themselves, and means designed to remove the cause or to effect a radical cure. The majority of patients in whom the symptoms of convulsions is present are children; hence, it is to cases of this kind that the present article refers. The call to a case of convulsions is always sudden, and the physician must respond to it without delay. His first object must be to bring about the cessation of the spasmodic movements. But little time is at his disposal for the discovery and removal of the cause, because the present and immediate danger is the convulsions themselves. Such advice may seem unscientific, but when he considers the high degree of cerebral hyperæmia, the attendant increased intracranial vascular pressure,

* Dewey, *Op. cit.*, p. 223.

the asphyxia, the increased labor thrown on the right heart, and the congestions of the internal organs generally, which are one and all brought about by the exertion incidental to the spasms, and the harm which may result from these changes, he will readily perceive the necessity for prompt action.

Inasmuch as the majority of cases of convulsions in infancy are due to auto-intoxication or reflex irritation arising in the gastro-intestinal tract, it is good practice to pay attention to the stomach and bowels as a routine measure, especially so when we obtain a direct history of the taking of indigestible food. To this end, we may secure an emptying of the stomach by lavage or the administration of an emetic. An evacuation of the bowels should be effected by a high colon injection or the administration of Calomel, preferably the former.

In the next place, we may administer drugs to suppress the spasms. Those which are admittedly the most universally useful are in the order of the necessity for their administration, Chloroform, Chloral hydrate, and Morphia sulphate.

In the majority of cases, Chloroform by inhalation is all that is required. The drug need not be pushed to the extent of complete anæsthesia, because the spasmodic movements generally cease long before that stage is reached. If the convulsions return after the effects of the Chloroform have worn off, then we should resort to Chloral hydrate administered by the rectum. Infants and children are very tolerant of this drug. Very small infants can take one and a half grains; of six months, four to five grains; of one year, eight to ten grains. The Chloral should be dissolved in one ounce of warm water or milk, and injected high up in the rectum through a catheter. To prevent the possibility of its escape, the buttocks should be compressed together. As a rule, the good effect of the injection is obtained in about twenty minutes after its administration. If, on the other hand, it fails, the dose may be repeated in the course of an hour.

The Chloral failing, our last recourse is to *Morphia*, against which drug many physicians have a decided prejudice. Nevertheless, it is the one which is most certain in its effects, and the least liable to do damage, especially in patients presenting weak heart. Infants and children are very tolerant to it in suitable doses, which may be stated as follows:

At six months, $\frac{1}{48}$ grain hypodermatically.

At one year, $\frac{1}{24}$ grain hypodermatically.

At two years, $\frac{1}{16}$ grain hypodermatically.

The possibility of danger from the administration of Morphia in these cases is still further lessened by the relatively great tolerance of convulsion cases to the drug. If the doses above mentioned fail to relieve inside of half an hour the dose may be repeated.

The convulsions having ceased, we may now institute measures look-

ing to the removal of the cause or the prevention of the recurrence. To the latter end, the child is kept as quiet as possible, and all persons not necessary to its care are excluded from the sick-room. The question of the administration of food is a subordinate matter; indeed, it is a good plan to give the child as near nothing as possible for twenty-four hours after the convulsions have ceased. After that the diet must be of the simplest character possible, milk and milk foods being the best. Sleep should be encouraged. It has been recommended by some that the recurrence of convulsions be prevented by the administration for two or three days of the bromides, especially of the Strontium bromide. In some cases this is undoubtedly necessary, but in the vast majority of instances hygienic rules and special remedies adapted to the case will produce the desired result.

Now is the time to investigate the cause of the convulsions, and having determined this, direct attention to its removal and cure. Among those which are deserving of special mention are gastro-intestinal irritation, rachitis, intestinal parasites (especially lumbrici), heart disease, peripheral irritations, and various toxæmia. Of course, in addition to these, there is an inherited or acquired instability of the nervous system which must be taken into account in every instance. Besides the above as causes, we have to consider the presence of the convulsions as symptomatic of organic cerebral disease, and as one of the prodromata of one of the acute infections.

Should the indications favor the diagnosis of an underlying organic disease of the brain, it is next in order to diagnose the nature of the lesion and assign its location. If the convulsions have been of the Jacksonian variety, and there is a history of recent traumatism, it is more than probable that the trouble has been produced by meningeal hæmorrhage. Under such circumstances *we must call in the surgeon*, with the idea of trephining and removing the effused blood. It will not do to delay, because pressure on an infant's brain, continued for two or three days, is capable of doing irreparable damage. Even in cases in which the trouble has not originated in organic brain disease, intracranial hæmorrhage may result from the violence of the paroxysms; these, likewise, call for surgical intervention.

I have said nothing as to the hydriatric measures usually enforced in the treatment of infantile convulsions. There is a growing conviction that the warm baths, so commonly advised by the laity, are capable of doing no good and may do harm. The warm mustard pack is a much better measure. This is prepared as follows: First, the nurse prepares the mustard water by mixing one tablespoonful of mustard in one quart of tepid water. A towel is saturated with this and wrapped around the patient's body, after which the little one should be enveloped in a blanket. The pack is kept on until it has produced a well-defined redness of the body, which is usually for ten to fifteen minutes.

When the convulsions are attended by hyperpyrexia, an important measure is the reduction of the temperature by the cold bath or cold pack. The former is usually the better. The water should be lukewarm at first; then cold water is added slowly until the desired degree of coldness is attained. The child should be kept in the bath until the rectal temperature is reduced to 102° F.

Internal medication after the attacks have been controlled should be directed against the causative factors. The following remedies are especially adapted to the convulsive phenomena:

Ignatia enjoys a greater reputation in the treatment of convulsions than does any other remedy. It is especially indicated in the cases occurring after fright or other violent emotions. The movements are largely of the tonic order, such as observed in strychnine poisoning. The child may have exhibited a neurotic tendency for several days preceding the attack; *e. g.*, there may have been whimpering during sleep. The face is usually pale during the convulsions, though it may at times be flushed.

Belladonna is indicated in convulsions arising from anger or violent emotions, and from reflex irritation. The symptoms suggesting its use are the bright red flushed face, the hot head, the wild staring eyes with dilated pupils, throbbing carotids, pungent heat of the surface of the body and spasm of the glottis.

Glonoïn is to be employed where there is evidently violent congestion to the head, and when arterial tension is high. Like *Belladonna* and *Opium* it is indicated for the bad effects of violent emotions.

Cuprum has convulsions associated with marked blueness of the face and mouth. The hands and fingers are firmly closed.

Opium is useful for cases occurring after fright; but there is a turgidity of the face, and stupor following the movements is profound.

Aconite and *Veratrum viride* are useful in cases in which the circulatory disturbances of those remedies are present.

Tetany.

The treatment of tetany resolves itself into the management of the attack, and the subsequent measures required to restore the patient to full health. In each and every case, it is necessary to determine the cause, for its removal is a *sine qua non* to success. In adults, the majority of cases originate in dilatation of the stomach, and its resulting auto-intoxication. Under such circumstances, the stomach should be evacuated thoroughly by lavage. It is also a good plan to give a purge of Castor oil or Calomel to empty the bowels. The temporary recovery of the patient in the gastric cases is usually brought about without much difficulty. In former years, it was taught that all of these cases ultimately died. Now that gastric surgery has reached such a high state of perfection a gastro-enterostomy should be regarded as the solution of the therapeutic problem.

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Aconite and *Veratrum viride* are useful in cases in which the circulatory disturbances of those remedies are present.

Tetany.

The treatment of tetany resolves itself into the management of the attack, and the subsequent measures required to restore the patient to full health. In each and every case, it is necessary to determine the cause, for its removal is a *sine qua non* to success. In adults, the majority of cases originate in dilatation of the stomach, and its resulting auto-intoxication. Under such circumstances, the stomach should be evacuated thoroughly by lavage. It is also a good plan to give a purge of Castor oil or Calomel to empty the bowels. The temporary recovery of the patient in the gastric cases is usually brought about without much difficulty. In former years, it was taught that all of these cases ultimately died. Now that gastric surgery has reached such a high state of perfection a gastro-enterostomy should be regarded as the solution of the therapeutic problem.

Some of these gastric cases are probably dependent upon acute dilatation of the stomach,* which in turn has been shown to be due, in part at least, to traction and mesenteric obstruction of the duodenum. The remedy for this is placing the patient in a prone position.

Cases occurring after thyroidectomy are generally treated on theoretical considerations by the administration of Thyroid extract in doses of five grains three times daily. It is said, however, that it is generally futile. Perhaps, if the Thyroid were administered hypodermatically, the results would be better.

There is every probability at the present time that these so-called thyroid tetanies are, in reality, dependent upon removal of the parathyroid bodies, and may be kept in abeyance by the administration of the fresh glands. According to Halsted,† the dried gland acts also, but is by no means as efficient as the fresh preparation.

Respecting Parathyroid feeding, it is well to remember that the glands are so small that it is a very easy matter for the party who secures them from the animal to make a mistake and secure some other tissue. This fact undoubtedly accounts for the varied results obtained from Parathyroid feeding. Physicians who know the subject thoroughly obtain good results, while those who are careless or ignorant concerning the same meet with failure.

Cases occurring during pregnancy demand energetic anti-spasmodic and medical treatment. These failing, there is no further resource than the induction of premature labor or abortion. If the disease manifests itself during lactation, the interests of the child must be sacrificed at once, and weaning must take place. The mother is usually highly anæmic; hence, remedies like *Arsenic*, *Cinchona*, *Strychnia*, and *Ferrum* should be prescribed.

To relieve the spasms in bad cases, we may find it necessary to resort to ordinary anti-spasmodic medication. The drugs which are admissible include *Potassium bromide*, *Chloral*, *Hyoscine*, and *Morphia*. These drugs, it must be understood, are to be used during the spasmodic stage only. During the interparoxysmal period, all measures must be directed to the improvement of the patient's general health.

Prolonged lukewarm baths may be used during the convulsions because of their sedative effects. Halbert recommends, in addition to the remedies above mentioned, *Cannabis indica* in doses of one-eighth of a grain of the extract every three to four hours.

The disease is always of a more serious nature in infants than in adults. In them also it is an important item of treatment to empty the stomach and bowels by lavage and purgation respectively. When the pa-

* Conner, *American Journal of the Medical Sciences*, March, 1907.

† *American Journal of the Medical Sciences*, July, 1907.

tient is the subject of rachitis, *Phosphorus* should be prescribed and continued for some time.

During the continuance of the convulsions but little thought need be given the subject of diet. Later, it should be the object to give food small in bulk and rich in nourishing qualities, and, as far as possible, liquid. Convalescence at the best is prolonged and tedious, and requires the exercise of good judgment in applying proper restorative measures. The remedies at this time are the remedies for asthenia, as *Arsenicum*, *Cinchona*, *Phosphorus*, *Phosphoric acid*, and *Nux vomica*.

The Tics.

On page 746 of my work on Diagnosis, I referred to a class of nervous affections under the name of convulsive tics. All of these affections are to be regarded as evidences of nervous degeneracy, varying in degree according to the intensity of the twitching, and the character of the associated stigmata. In the more commonly observed cases the twitching is limited to one or a few muscles of the face, and consists of a peculiar grimace. Otherwise the patient is in perfect health. In still other cases we have an exhibition of mental eccentricities pointing unquestionably to the degenerative origin of the ailment. It is unfortunate that the tics have been classed with chorea for many years, an error that now seems inexcusable, inasmuch as they have no pathological relationship to that disease. I doubt very much if the name of "Habit spasm," first proposed by Weir Mitchell, is very much better, as very few of them are dependent upon habit. Unquestionably, there are some cases observed in children in which the morbid movement appear to have been excited in the first place by imitation of relatives similarly affected; but even in them, the neurotic taint is necessary for the full development of the tic. Nevertheless, an important element in the treatment of these cases is the removal from companionship with the ones they imitate, especially if, as is usually the case, such persons are mentally unfitted by temperament for the proper bringing up of children.

The tics originating then in a nervous degeneracy must be exceedingly obstinate to treatment. In fact, there are very few of them in whom we have good reason to expect a perfect cure. For therapeutic purposes we may classify the cases as follows:

1. Tics of the face originating in irritation in the course of certain of the cranial nerves. Such irritations are found in refractive errors, muscular anomalies, nasal hypertrophies, post-nasal adenoids, diseases and deformities of the teeth.
2. Localized twitchings or tics occurring in persons who are apparently healthy, appearing, as a rule, during the days of early childhood.
3. Cases first manifested in advanced life, and probably dependent upon arterio-sclerosis or organic diseases of the nervous system.
4. Cases associated with well-defined stigmata of degeneracy.

Of these various types, the first one only offers a favorable prognosis, and even this class may become incurable if the removal of the source of irritation is postponed too long, or if the treatment is directed entirely to the local condition to the exclusion of the improvement of the general health of the patient.

It is under exceptional circumstances only that we succeed in curing cases belonging to the second class. The difficulties encountered are two. In the first place, parents are too frequently encouraged to neglect systematic treatment by the plea that the spasm is insignificant and that the patient will "grow out of it;" and, in the second, the symptoms is a phase of nervous degeneracy. As a matter of fact, it is reasonable to believe that if such cases were taken in hand while the patients are still very young, and the spasm habit not fully formed, much better results than we now obtain could be secured. In the mild cases, our efforts should be directed to enforcing a life in the open air as the first desideratum. Ridiculing the little sufferer must be carefully watched for and prevented as far as possible. Punishment or threats should not be utilized as a means of inducing the child to restrain the abnormal movements. The most efficient means of restraint is the cultivation of muscular activities in other lines. While encouraging the out-door life, care should be observed to prevent going to extremes in the way of exertion. The patient's exercise should go no further than a healthy tired feeling. When the disorderly movement is a co-ordinated one, and is not associated with any mental weakness, it is more than probable that the movement is due to habit, pure and simple. Such movements are more under the control of the will than is the case with other varieties of tic, and special watchfulness on the part of the patient and family will be sufficient to perfect a cure. In cases which seem to have originated in association with a person the victim of tic, it is important to remove the patient from companionship with the person imitated.

The cases which first manifest the disease in advanced life are practically always dependent upon arterio-sclerosis or serious organic lesions of the nervous system. Very little can be done for their cure. Their sufferings can, of course, be alleviated by following out the instructions laid down in the section on the treatment of arterio-sclerosis in special, and of the general health in general. In spite, therefore, of the apparent hopelessness of the illness it is hardly fair to the patient to abandon him.

The cases associated with well-defined stigmata of degeneracy are absolutely incurable. They include such diseases as Latah, Gilles de la Tourette's disease, and others. The degeneracy is too profound and the surroundings of the patient are so unfavorable that it is practically useless to make an effort in behalf of the patient.

Very little can be said of the palliative remedies in cases of tic. Most of the drugs which have been recommended fail even to give temporary

amelioration. Graeme Hammond recommended Conium a number of years ago, and reported cases as cured by it. The drug certainly does restrain the movements for a time, and in some few instances the relief is permanent. His method consisted in administering the fluid extract of Conium in gradually increasing doses, the drug being used to the extent of producing physiological action. The initial dose is five drops of the fluid extract three times daily. This preparation as put out by different pharmacists varies greatly in strength and efficacy, so that one cannot be arbitrary in naming the dose.

Surgical measures recommended include nerve stretching and nerve resection. I must confess that I regard such measures as of doubtful utility. Nerve stretching is the least harmless. It must, for a time at least, put a stop to the twitchings, and in some few cases has effected a cure. But it must be remembered that tic is after all a constitutional disease, even though its manifestations are frequently local. Such patients must twitch somewhere. If we stifle the movements in one part they are capable of appearing elsewhere.

Cases have been reported as cured by hypnotism. While not doubting the disappearance of the twitching under such a remedy, it must impress the intelligent physician that the employment of hypnotism in degenerates is likely to bring about new complaints to which, in comparison, the tic is a mere trifle. In thus speaking against hypnotism, I must impress my firm belief in the value of a healthy suggestion, such as may be effected by the personality of the physician, and a healthy cheerfulness on the part of the family and attendants.

Cuprum arsenicosum is unquestionably the most valuable remedy. It should be given in doses of one grain of the second decimal trituration four times daily. After a week or two the dose may be doubled with advantage. I have seen some very good results from its use. The old-school physicians praise Cupric sulphate and recommend that it be used to the limit of tolerance; experience will teach others, as it has me, that the arsenite is much more efficacious.

Hyoscyamus is very useful in limiting the severity of angular twitchings manifested in various portions of the body, but especially about the face and shoulders. It is not as deep-acting a remedy as the *Cupric arsenite*. When the movements are of a gyratory character *Stramonium* will prove to be the better remedy.

Agaricus has been much used for the relief of the different varieties of blepharospasmus; but my experience has taught me that *Hyoscyamus* is much more efficient.

Cicuta, *Cimicifuga*, *Pulsatilla*, *Cocculus*, *Gelsemium*, *Ignatia*, *Laurocerasus*, *Mygale*, *Phosphoric acid*, *Phosphorus*, *Nux vomica*, *Sepia*, *Simaruba*, *Veratrum viride*, *Zincum metallicum*, *Zincum phosphoricum* and *Tarentula*

may be studied as possible remedies, when the ordinary measures as above outlined have failed.

But many remedies other than those above mentioned may prove efficient by reason of having a clinical relationship to indigestion or other intercurrent illness or constitutional deficit.

Occupation Neuroses.

Writers' cramp being decidedly the most common of the occupation neuroses, its treatment may be presented as typical of that usually adapted to this class of complaints. The physicians in charge of these cases must have a proper conception of the etiology of the illness. Were the neurosis dependent entirely upon excessive use of the parts involved, cases of this character would be much more common than they are. Faulty methods of execution and a neurotic or depreciated constitution are very important factors. Thus, in the case of writers' cramp, investigation almost invariably shows that the patient has been in the habit of holding his pen in a cramped position, and made almost all of his movements from the wrists instead of from his shoulder. Most victims, however, are underpaid, and this usually means underfed clerks, who lead sedentary lives and obtain but little recreation or rest in the open air.

The most important element in the treatment of the occupation neuroses is absolute rest of the affected part. This means practically that the patient must abandon his occupation permanently, or at least for a long period of time. This, of course, is a serious matter to the class of people affected, but it is good advice, for temporizing is rarely successful, and if the disease persists despite the misdirected treatment, the patients very frequently drift into a highly neurotic state, in which case they are not infrequently incapacitated for all labor. It may not be necessary to enforce rest of the part, as very often it is only the repetition of the particular class of movements which have occasioned the disease that are harmful. The patient may receive encouragement in taking the proper rest in the certain hope that the early abandonment of the faulty movements brings about an early cure. Many forms of apparatus designed to bring relief to the affected muscles by calling others into action have been invented; but they are all open to the objection that they are not curative, and simply delay the time when total disability must result, unless complete rest is taken. At the very onset of the trouble one month's rest will accomplish wonders, if not indeed cure; while if the case be permitted to proceed for a year or more, a rest of many months will accomplish but little.

As means for the prevention of relapses, the patient should write with a soft quill or gold pen; his penholder should be thick and made of cork.

If writing must be persisted in, the patient should then learn to write with the left hand. It is true that in many instances this member follows

the fate of its fellow at an early date; but even then the patient is no worse off than he was before.

Those whose writing is not in books should learn to use the type-writer.

As stated above, anxiety and depreciation of the general health standard serve to intensify if not actually bring about the occupation neuroses. For this reason, constitutional measures are often of considerable value in all stages of the disease. The patient should be given plenty of food and fresh air.

Physiological medication accomplishes nothing in the treatment of the occupation neuroses. The possibility of alleviation of symptoms in this way is chimerical.

Hughes suggests the use of *Arnica* as a curative remedy. Some cases have been reported as cured with *Gelsemium*. The injection of *Strychnia* into the contracted muscles has given some good results in the hands of old-school authorities, who have commented on the curiosity of the treatment.

Electricity is of considerable value in some cases. Galvanism is the preferable current. Beard and Rockwell recommend both central and peripheral treatment. "Galvanization of the upper portion of the cord, and the median and radial nerves, spinal cord, plexus, and nerve trunks, and faradization of the affected muscles and their antagonists may be tried; and when anæsthesia exists, the wire brush."

Relief of the spasm may also be secured by enveloping the affected extremity in a cold wet-pack once or twice daily.

Massage, systematically applied, has cured some cases in the hands of skillful manipulators. A writing master from Frankfort, Germany, by the name of Julius Wolff, created quite a stir some years ago by his claims of wonderful results in the treatment of this affection. He kept his method for the most part secret; at least all his descriptions as published in the medical journals at my disposal are so indefinite as to be valueless for practical purposes. From all that I can learn, his method does not differ materially from that practiced by Dr. M. Roth for a number of years past, and which consists of systematic manipulations of the entire upper extremity, after which the patient performs voluntary movements of every conceivable kind with the affected fingers. Next, the operator proceeds to make passive movements of the parts, the patient resisting him.

Paralysis Agitans.

Among all the incurable diseases, I do not know of one that gives me a greater feeling of hopelessness than does paralysis agitans; and yet it cannot be said that we do not benefit patients suffering from this disease. The feeling arises from the knowledge that do what we will, the tremor

and peculiar attitudes of the body slowly but surely progress until the patient is absolutely helpless. One of the difficulties encountered in the treatment of paralysis agitans—indeed, I feel it is the chief difficulty in getting the best results—is the patient's pursuit of false gods. The legitimate profession promises but little, quackery promises everything. Hence, the latter secures opportunities for damaging the patient's chances.

In the very beginning, the patient should be made to understand the importance of following out certain hygienic directions, which must be continued for an indefinite period. Warm baths and massage do the most good; especially do they relieve the muscular rigidities. Avoidance of all fatigue is necessary, and yet it is advisable for the patient to take a certain amount of exercise in the open air each day. The patient should arrange his business and social affairs so that he may be as free from worry and anxiety as possible.

The baths should be at a temperature of 95° F., and should be from twenty minutes to one-half hour's duration. They may be utilized not only for the reduction of the rigidity, but also for promoting rest at night. Hand friction, with water at a temperature of 75° F., is very useful for relieving the distressing sensations of heat which annoy the patient from time to time.

The massage whenever possible should be at the hands of a skillful masseur. Osteopathic manipulations should be discountenanced. About ten years ago, Charcot announced that patients with paralysis agitans obtained great relief from the vibration produced by rough-riding vehicles. This therapeutic suggestion was at once seized upon by numerous patients, and tried out faithfully. It was found to be useless. The same may be said of the various vibratory apparatus which have been recommended from time to time.

Electricity in the shape of a weak galvanic current through the head has been recommended by Eulenberg. Beard and Rockwell claim some curative results from general faradization and central galvanization, though they think the best results will be obtained by galvanization of the spine, sympathetic nerves, and the brain. Gray's method consists in the application of a large flat electrode to the nape of the neck, and another somewhat smaller to the lumbar spine. A current of from three to five milliamperes should be passed for five minutes. Later, this may be increased to fifteen or twenty milliamperes, and the sittings to fifteen or twenty minutes. The seances should be given at least three times a week.

Patients with paralysis agitans are very susceptible to suggestion. This has led to the recommendations of many remedies as adapted to the disease, but which have subsequently been found to be worthless. The fact that suggestion is of value argues for a strong and pleasant personality on the part of the physician, so that he may be useful even though his remedies are not.

of drugs that will do away with the old school of medicine. Of these, Hyoscyamia occupies a prominent position. Years ago it was used by Hyoscyamia for an extended period. It was once daily or every other day in doses sufficient in stopping the tremor, and to it was powerless against the rigidity, and, the annoying dryness of the mouth that patients experienced very long. *Duboisia sulphate* in doses of three times daily by the mouth is highly spoken of for its ability to suppress the tremor as effectively without any of the annoying physiological action. It is also of use on the accession of vertigo, cephalic paræsthesia, nausea, dryness of the mouth and tongue, it

in homœopathic literature are very unsatisfactory. The fact they have not been repeated with success shows doubt on their reliability. The remedies recommended are, Mercurius, and Tarentula. The latter drug was of effect on purely symptomatic indications. The other remedies are particularly because of the prominence of the tremor in the pathologies.

favorably of *Kali bromatum*, *Calabar bean*, *Cannabis indica*, *Opium*, and *Aselli*. From the context one is forced to believe that he is referring to a number of pathological conditions under the heading of paralysis. The remedies he suggests are all such as one would judge their pathogeneses to be useful in cases presenting tremor as a symptom.

was cured for Hughes a case of tremor of long standing in an arm. It had the peculiar feature of twitching of the arms, ceasing when he was at his work of shoemaking. Drop doses of the tincture were administered.

Laryta, *Bufo*, *Gelsemium*, *Hyoscyamus*, *Rhus*, *Tabacum*, and *Zinc* may also be studied.

Tremor.

The successful treatment of tremor as a symptom demands an accurate diagnosis as to its origin. The so-called **essential** or **simple tremor** is not amenable to treatment; that is to say, no remedies at our disposal exert the slightest influence on its course. Nevertheless, such cases are to be regarded as hopeless, for a respectable proportion of them make complete recoveries after a lapse of years.

* *Treatment of Nervous Diseases*, p. 499.

Senile tremor is, likewise, not amenable to treatment. It is one of the results of the degenerative changes of advancing years. The most that we can do is to advise such measures as are suitable to arterio-sclerosis and old age. *Baryta mur.* and *Aurum mur.* are the only remedies offering any hope.

The **asthenic tremor** yields very readily to treatment when the cause of the exhaustion has been discovered and removed. As a rule, these are readily determined, and include acute and chronic exhausting diseases, hæmorrhages and sexual excesses. The principal remedies are *Cinchona*, *Strychnia*, *Phosphoric acid*, *Zincum metallicum* and *Zincum phosphoricum*.

Hysterical tremors yield only to the general measures required for the management of hysteria in general, to the article on which the reader is referred. The remedies especially indicated are *Ignatia*, *Cimicifuga*, *Cocculus*, *Platina*, *Scutellaria*, *Asafetida* and *Zincum*.

Toxic tremors demand that the patient be removed from the influence of the poison producing the symptom. Plumbic and mercurial tremors are usually produced in artisans following certain trades. Tobacco, alcohol, chloral, opium, tea, coffee, etc., in excess are common causes. The offending poison must be taken away entirely. Success will be hazarded if the physician satisfies himself with simply limiting the daily quantity of the poison.

Uræmic tremor is very rarely observed. Its treatment is that of the uræmic state in general.

In the case of poisoning by lead and tobacco, active eliminative measures are to be recommended. Inasmuch as Potassium iodide combines with the metal in the system to form soluble iodides of lead and mercury, as the case may be, it should be given but in small doses, that is, five grains three times daily. *Hepar sulphur* is a good general antidote for both metals. *Nitric acid* and *Aurum* are special antidotes to mercury.

In alcoholic tremor the principal remedies are *Nux vomica*, *Strychnia*, *Arsenicum* and *Cannabis indica*.

Thuya is the best antidote to tea.

Remedies recommended for tremor as a symptom include the following: *Alum*, *Anacardium*, *Arnica*, *Arsenicum*, *Calcarea carb.*, *Cannabis indica*, *Causticum*, *Cicuta*, *Cocculus*, *Conium*, *Hepar*, *Kali brom.*, *Kali carb.*, *Kali hyd.*, *Mercurius*, *Natrum mur.*, *Nitric acid*, *Physostigma*, *Nux vomica*, *Plumbum*, *Platina*, *Pulsatilla*, *Rhus*, *Secale*, *Silicea*, *Stramonium*, *Sulphur*, and *Zincum*.

Symptomatic tremors, as those occurring in the course of exophthalmic goiter, writers' cramp, etc., are to be reached by measures looking to the cure of the primary disorder.

Tremor from fright calls for *Aconite* or *Ignatia*.

Functional tremor, *Physostigma* and *Sparteine*.

Chorea.

Rest is a very highly important measure in the treatment of chorea. I cannot understand how the prevailing treatment by exercise gained such prominence. Certainly, it is not the fault of the modern writers, *i. e.*—those of the last fifteen years. In the mild cases, gymnastics and out-door sports do no harm, excepting in the sense that they interfere with our doing good. The prescription of rest must be properly graded according to the case. There can be no doubt that with proper facilities that all cases would be benefited if the rest were made absolute and the patient confined to bed. In some cases the rest period may be limited to ten or fifteen days. There can be no objection to permitting the little sufferer having his toys in bed in order to lessen the monotony of his confinement.

Fresh air is always a valuable adjuvant, and should be combined with rest when weather conditions will permit. To permit activity in the open air to secure the beneficial action of the latter is not good practice.

It is needless to say that the child should be taken from school and all study positively interdicted. Even after recovery has taken place, there should be a careful supervision over the patient's studies. Everything that can be done to restrain undue nervous activity must be enforced.

Aside from the matter of study, choreic patients should be kept from school because of the unpleasant attention they receive from other scholars. They are, as a rule, very sensitive to ridicule, and their experiences at this time may have a serious effect on their subsequent lives. Their presence in the school-room is also prejudicial to such of the other scholars as have hysterical temperaments, thus leading to out-breaks of what in past years we were pleased to call chorea by imitation, but which we now know to be truly hysteria.

The diet should be of the most nourishing character. Goodhart and Phillips have reported remarkable results from overfeeding alone. In cases giving evidence of malnutrition, cod liver oil is of unquestionable value. It is even wise, in my opinion, to administer it as a routine measure in this disease. Fatty food is a great aid in the treatment of all neurotic conditions. Children, as a rule, bear the cod liver oil remarkably well. The character and quantity of the food and the frequency of feeding must, of course, be prescribed according to the age and general condition of the patient.

Moral management of these cases is very important. Children are great observers, and may be unfavorably affected by injudicious behavior of attendants. Exhibitions of parental worry must be avoided. The medical attendant must ever be cheerful and hopeful in their presence. Perhaps the best device is one which will lead the little patient to look hopefully forward to some pleasant event that will occur when she is well.

In very severe cases, when the movements are violent, it is necessary to take measures to prevent self-injury. Confining the limbs is bad practice. It is better to simply pad the sides of the bed. In these severe cases it is remarkable to notice the improvement that will often follow the absolute rest in bed. In a week or ten days such patients will often quiet down remarkably. Relapses may readily occur, however, from too early getting up.

Sleep is undoubtedly the best form of rest. When, therefore, there is any prospect of its becoming poor, it must be looked after closely. While the general rule is to secure sleep at all hazards, this injunction must not be obeyed recklessly. Usually a warm bath or a hot sponge bath in the evening will be amply sufficient to give a good night's rest. In certain rare instances—in cases which will become less and less frequent as one's experience increases—hypnotics will be found necessary. Then we may have recourse to *Trional*, *Veronal*, or *Chloralamid*.

In certain aggravated cases of chorea, the sleep treatment has been recommended. Forchheimer,* who is the advocate of this plan, proposes to get the patient rapidly under the effect of Chloral hydrate, the soporific effect of the drug being maintained for two days. The patient must be in a hospital or in the care of intelligent nurses. During the first day, the Chloral is given in doses of five grains every four hours; the second day, two and a half grains are added to each dose; on the third day, a similar addition is made unless the movements are controlled for twelve hours. Then the quantity of Chloral is reduced or discontinued entirely. He instances one case to prove the harmlessness of Chloral hydrate in children in which the patient took eight grammes or 120 grains in the course of a day. Forchheimer declares that this treatment "has always resulted in one of two ways; either the child wakes up cured—*i. e.*, without any form of chorea—or the grave form has been converted into the mild form."

While I have had a very large experience in the observation and treatment of chorea, I have been sufficiently fortunate to have no grave cases excepting a few seen in consultation with other physicians. In them, the condition was distressing enough, and as Forchheimer observes, to encourage those who are afraid to give the Chloral, it can hardly be more dangerous than the disease it is intended to cure, and its administration is certainly controlled without difficulty.

Fatal cases of chorea owe their unfortunate termination to profound prostration. This may be avoided in nearly all instances by systematic attention bestowed on the patient in the first stage of the disease. When prostration has started in, it is to be combated by alcohol in full doses. Chloral, as recommended above, is hardly admissible. Very frequently the failure in strength is announced by marked dryness of the skin and the refusal to take food. At this stage a warm wet-pack is a valuable adjuvant.

* *The Prophylaxis and Treatment of Internal Diseases*, p. 555.

Massage is useful as a general measure in subacute and chronic cases. It secures all the beneficial effects of exercise without exposing the patient to the effects of tire.

When a choreic patient exhibits evidences of heart involvement it is a very important matter to insist upon long-continued rest as one would in a case of acute rheumatic endocarditis. A sufficient number of cases of incurable organic valvular disease of the heart following chorea have been reported to make this injunction an important one.

As to the remedies for chorea, there are none in which I have as much confidence as I have in *Agaricine*. This remedy I have been in the habit of using in the second decimal trituration, administering a one-grain tablet of the same every two hours, or, in extreme cases, every hour. I invariably give it when indications call for no other drug. With *Agaricus* I have had but little experience, and that unfavorable. Still, I have limited its use to cases in which the prominent symptom was twitching of the eyelids, and in which condition *Hyoscyamus* has given me decidedly better results. In cases with spinal symptoms it may, however, be borne in mind, as its pathogenesis shows it to be a remedy of value, *e.g.*, spasmodic motions from simple involuntary motion and jerks of single muscles to a dancing of the whole body; trembling of legs and hands; soreness of the spine; aggravations of symptoms during a thunder-storm. The characteristic symptom of *Agaricus*, tingling of different parts of the body as if frost-bitten, must not be forgotten.

Exalgin has been used in doses ranging from one to two and three-quarter grains three times daily, by Mettenheimer,* who thinks that he has thus shortened the course of the disease to a considerable extent.

Ignatia should be administered in cases resulting from fright, grief, or other depressing emotional influences.

Causticum has been recommended under the same circumstances by Jahr, when *Ignatia* proves inefficient. Its special sphere is in cases in which paretic conditions are strongly marked. The right side of the body is especially apt to be involved. The movements are severe; the tongue is affected, so that speech is indistinct, and words are jerked out. *Causticum*, being a good anti-rheumatic remedy, is all the more indicated when a history of that disease is present.

Ferrum redactum, as suggested by Hughes, I believe to be a necessary remedy in cases characterized by marked anæmia or chlorosis. The dose is one grain, three times daily after meals.

Actea racemosa is indicated both etiologically and symptomatically in chorea. By reason of the former, it is valuable in rheumatic cases, and also in those occurring in girls at the age of puberty. Myalgic pains are

* *New York Medical Journal*, October 20, 1894.

apt to be present. The association of the disease with uterine symptoms only serves to indicate the drug more strongly. Reflex neuralgias are prominent symptoms. The choreic movements are worse on the left side. If menstruation has already appeared the movements are apt to be aggravated at such times. Sleeplessness, depression of spirits, and other evidence of mental derangement afford additional indications for *Actea racemosa*. Chorea from fright or during pregnancy; melancholia; sleeplessness; wearing pain in the left side of the chest.

Pulsatilla, like the remedy last named, is adapted to cases occurring in girls at the age of puberty. The peculiar *Pulsatilla* mental condition is the leading indication of the drug.

Hyoscyamus, already suggested, is adapted to cases in which local twitchings are a prominent feature. It may also be useful in severe cases, even in those in which mania becomes a prominent symptom. Prostration is great.

Stramonium is indicated in cases in which the movements are both general and violent. The cerebral condition is the indicating one. The child awakes from sleep screaming, and laughs without reason.

Veratrum viride has cured a number of very severe cases when prescribed empirically, as reported in Hale's *New Remedies*. It should be especially useful in cases characterized by rapid pulse and congestion of the brain. It is also useful in plethoric girls, the movements being very violent.

Cina and *Spigelia* are said to be adapted to cases arising from the irritation of worms.

Naphthalinum may also be prescribed in cases associated with worms.

Nux vomica has cured cases which have been overdrugged, or in which gastric symptoms were prominent features.

Iodine is suggested by Hughes in cases presenting a tubercular history. The homœopathicity of this drug to chorea is shown by the fact that twitchings are prominent in the symptomatology of iodism. Jousset reports excellent results from Iodine in the graver forms of the disease.

Zincum is indicated when the general health suffers much, and fright has been the cause of the disorder. The feet are more markedly affected than usual.

Zizia has been recommended where the choreic movements persist during sleep, a rare condition of affairs.

The spider poisons have been strongly advocated as choreic remedies. *Tarentula* especially in cases in which the movements affect the right arm and right leg. Jousset looks upon this as our most efficient remedy in chorea.

Mygale was, for a long time, my favorite remedy. While it did good work in a number of cases, still it did not accomplish what *Agaricine* does

now. The provings of this drug were made by Dr. J. G. Houard, who is the authority for the following symptoms: "Muscles of the face twitch; mouth and eyes open and close in rapid succession; cannot put the hand to the face, it is arrested midway and jerked down. Gait unsteady; legs in motion while sitting, and dragged while attempting to walk. Constant motion of the whole body."

Cuprum is mentioned by Bæhr as his favorite remedy. He gives it in all cases in which no other remedy is indicated. He claims that chorea rarely lasts more than three or four weeks under its administration.

Rademacher used this remedy in the chorea occurring in chlorotic girls. *Cuprum arsenicosum* may also be used in this line of cases.

Strychnia sulph. may be prescribed in cases of chorea with paralytic manifestation. The dose should never be greater than $\frac{1}{200}$ of a grain every three hours, and usually $\frac{1}{400}$ of a grain every two hours will suffice.

When the chorea is associated with anæmia we may prescribe *Strychnia phos.* in the same doses just recommended for *Strychnia sulph.* Hale recommends *Strychnia ars.* for the same class of cases.

Argentum nitricum 2x to 4x was the routine remedy of Gross, of Regensburg.

Chorea of pregnancy requires *Macrotine* 1x, *Ignatia*, *Agaricus*, *Gelsemium*, *Hyoscyamine*, *Hyoscine*, *Ferrum arsen.* 2x, *Viscum album*.

Scutallaria has been very highly recommended by Hale for the chorea of children when caused by overstudy or worry; also in the chorea of women associated with sleeplessness.

Other remedies that may prove useful are *Phosphorus*, *Sulphur*, *Calcarea carb.*, *Cocculus*, *Belladonna*, and *Phosphoric acid*.

Arsenic in the form of Fowler's solution, as used by the old school, will prove of value in many intractable cases. The dosage as usually recommended will vary largely according to the individual preference of physicians. Since writing on the treatment of chorea in Goodno's *Practice of Medicine*, twelve years ago, I have learned to put great faith in this remedy. I believe that the best results are not obtained until the drug is pushed to the point of physiological action. It is a good plan to start with two minims three times daily. On alternate days the daily quantity should be increased by three drops, so that at the end of two weeks the patient is taking ten drops three times daily. In older children, and in the hands of physicians who insist upon keeping a careful watch on their cases, the initial dose may be five minims three times daily. In the majority of cases, the maximum final dose is fifteen minims three times daily, well diluted and after meals.

Electricity may be employed in obstinate cases. I much prefer the method of application proposed by Dana, namely, anodal galvanization of the brain. The positive electrode, well moistened, is placed over the motor

area on the side opposite to the one most severely affected by the movements. The negative electrode is then placed in the choreic hand. A mild current is then permitted to pass without interruption for two or three minutes. If both sides are affected, then the sides of the electrodes are reversed, the positive one being still kept to the head, and the negative to the hand. Beard and Rockwell recommend general faradization and central galvanization after their peculiar methods. Erb makes applications to the head, so that the motor zones of the brain are situated directly between the electrodes, *i. e.*, obliquely from the region of the central convolutions to the opposite side of the neck (negative, large electrode) for one-half to one minute on each side with a feeble current, or in the manner recommended by Berger, with a bifurcated electrode, the positive upon both parietal regions, the negative being placed in the hand or upon the back for five to ten minutes.

Vertigo.

No general measures can be directed to the relief of vertigo as a special symptom. All hygienic measures must have some bearing on the causative factor.

Vertigo from organic brain disease must be regarded to a certain extent as possessed of a localizing value, as it occurs with remarkable frequency in connection with lesions of the cerebellum; less commonly with lesions of the frontal lobes. It may be one of the symptoms of general brain disturbance. From a medicinal standpoint, it should be remembered as a not infrequent precursor of the active or severe symptoms of brain syphilis; hence its occurrence in young and middle-aged adults should lead to the investigation of the patient's venereal history, and if positive information is obtained, anti-syphilitic medication should be prescribed.

Causticum is our principal remedy in organic vertigo. The disordered equilibrium is associated with mental weakness and a constant feeling of anxiety. *Plumbum*, *Argentum nitricum*, *Anacardium* and *Aurum muriaticum*, are also remedies for the vertigos of organic cerebral disease.

Circulatory vertigos include those dependent upon disease of the heart itself, and those originating in changes of the bloodvessels. The general measures required are those which lessen the work thrown upon the diseased heart—in some cases prolonged rest in bed. It is not always an easy matter to institute a proper treatment for the circulatory vertigo because of the multiplicity of etiological factors, such as irregular supply of blood to the brain, variations in vascular pressure, cardiac weakness, toxæmia, etc. Each case must, therefore, be carefully studied. In many, especially when the vertigo depends upon passive congestion, and other organs suffer in like manner, *Digitalis*, *Strophanthus*, and other cardiac tonics are indicated.

The vertigo of arterio-sclerosis, in other words, the vertigo of the

aged, is very resistant to all treatment. It is really a combined circulatory and toxic vertigo. It is best treated by regulation of diet so that the patient takes but the proper amount of food, but always sufficient to maintain good nutrition, and by attention to the regularity of the bowels. Otherwise, the treatment is that of arterio-sclerosis in general. The remedies indicated include *Digitalis*, *Conium*, *Glonoïn*, *Kali hyd.*, and *Rhus tox.*

The vertigo attendant upon interstitial nephritis is a combined vascular and toxic vertigo, being due to insufficient elimination by the kidneys and to increased vascular pressure. The latter is usually the most prominent factor. The remedies are *Glonoïn*, *Amyl nitrite*, and *Erythrol tetranitrate*.

Epileptic vertigo should be treated as if the case were one of idiopathic epilepsy, *i. e.*, by the administration of bromides when ordinary measures fail to relieve, and careful regulation of the patient's eating habits.

Hysterical vertigo is best treated by attention to the hysterical state, which means that the patient's complaint should be minimized as far as possible, and the giving of directions adapted to the existent condition and the patient's temperament. For these purely nervous vertigos, *Theridion*, *Ambra grisea*, *Sanguinaria*, and *Phosphorus* are the principal remedies.

Neurasthenic vertigo demands the treatment of the general neurotic state, and especially that the patient shall be given mental and physical rest. The remedies are *Zinc phos.*, *Nux vomica*, *Phosphorus*, *Picric acid*, *Strychnia*, *Ferrum*, *Arsenic*, and *Conium*.

Vertigos Originating in Diseases of the Eyes and Ears.—

Vertigos arising from errors of refraction and insufficiency of the ocular muscles are much more frequently observed than would appear at first sight. The recognition of their cause indicates the treatment, *i. e.*, the correction of an error of refraction, and the strengthening of the ocular muscles; failing in the latter, tenotomy. In some of the cases, dependent upon muscular anomalies, the vertigo is due directly to the diplopia. In cases of insufficiency of the superior rectus, the association of vertigo is very common.

Aural vertigo is quite common. One of its simplest varieties is that dependent upon the presence of inspissated cerumen or foreign bodies in the auditory canal. But vertigo may also arise from anchylosed ossicles, sclerosis of the lining membrane of the middle ear, occlusion of the Eustachian tube and numerous other ear lesions. The treatment of these will be referred to in the chapter on Aural Therapeutics.

Meniere's disease, or more properly **Meniere's complexus of symptoms**, demands that the patient be ordered to rest in bed during continuance of the paroxysms. We have in the therapy of this condition one of the interesting examples of the adoption of a homœopathic remedy by an eminent old-school practitioner. Charcot, noting that the administration of Quinine in physiological doses produced symptoms similar to those of

Meniere's disease, made therapeutic experiments as to its efficacy. He reported favorably on the remedy, and his results have been confirmed by numerous others. His method consisted in administering the Quinine in doses of two or three grains three or four times daily for one week. Then the remedy was discontinued for a week, and so the drug was administered during alternate weeks for a month and a half. At first it produces a slight aggravation, which soon gives place to improvement. As Charcot and others say, Quinine is not a specific, *i. e.*, it does not cure all the cases. Other remedies having a similar action, and which may be prescribed when Quinine fails, are Salicylic acid, Sodium salicylate and Carbon bisulphide. Gelsemium is highly recommended by Ringer, who prescribes ten drop doses of the tincture three times daily.

Of the **toxæmic vertigos**, the most important is the gastric. This is amenable to hygienic measures and medication directed to the digestive tract. Special attention should be paid to the bowels, which should be made to act a little more freely than normally for a week or ten days. For this purpose, Hunyadi or Apenta water or the effervescent Phosphate of Soda may be administered each morning before breakfast. The principal remedy for gastric vertigo is *Nux vomica*.

For the vertigo produced by excessive indulgence in tobacco, alcohol, coffee, etc., and the medicinal administration of Quinine or Salicylic acid and the Salicylates, the treatment is obvious, *tolle causam*.

For congestive vertigos, *Belladonna*, *Glonoin* and *Stramonium*.

For anæmic vertigo, *Cinchona* and *Ferrum*. The latter drug had best be administered in the form of iron reduced by hydrogen, from one to two grains three times daily.

Night Terrors.

When called upon to treat a case of night terror in children, it is of the greatest importance that the nature of the case be clearly defined in the practitioner's mind. As shown by Coutts,* cases of this illness may be divided into two classes. One of these includes the majority of cases, and partakes of the nature of a nightmare brought about by a partial asphyxia. Post-nasal adenoids is the usual cause of such cases. In another set, the trouble originates in the usual causes of disturbed sleep, such as indigestion, undue excitement during the evening, "bug-a-boo" stories told by the nurse. With the discovery of the cause, the way to a successful treatment is obvious. Worms, which is so dearly treasured by the laity as an important cause, may be eliminated from the etiology of this affection.

In the second class of cases, we find children who are of a highly neurotic constitution, and the attacks themselves are very strongly suggestive of the possibility of their epileptic nature.

* *American Journal of the Medical Sciences*, February, 1896.

It matters not which of the two classes to which the patient in hand may belong, measures looking to the diminution of the cerebral irritability are in order. All sources of reflex irritation must be removed, as defective teeth, post-nasal adenoids, tight foreskin, eyestrain, etc. The child should not be permitted to eat heavily in the latter part of the day, and at no time should he overload his stomach with indigestible materials. The general measures necessary for the improvement of the tone of the nervous system must be enforced.

The remedies include *Belladonna*, *Stramonium*, *Cina*, *Nux vomica*, *Kali bromatum*, and *Sulphur*.

Headaches.

On page 790 of my work on Diagnosis, I presented a classification of headaches according to their etiological and pathological relations, and presented the data for their differential diagnosis. The diagnostic problem being solved, the treatment so far as it relates to hygienic details is plain. Thus, the headache of eyestrain, nasal disease, anæmia, heart diseases, etc., may be cured or relieved by attention to the primary factor. The symptomatic headaches of organic brain diseases require attention only in connection with the diseases of which they are one of the symptoms. The toxæmic headaches demand measures looking to the removal of the constitutional taint. I need therefore speak at this time of the traumatic headaches, and also of certain obscure cases which we have been pleased to denominate essential headaches. This task having been completed, I will give in detail some of the remedies useful for the relief and cure of headaches.

Traumatic headaches are more frequently talked of than seen. The physician undoubtedly meets with many cases in which the headaches is attributed to some head injury more or less severe, sustained many years before. But when such cases are subjected to a careful analysis, it will be found in the vast majority of the cases that they are dependent upon one or other of the causes I have enumerated in the article mentioned, and that traumatism has nothing whatever to do with their origin. If a head injury is sufficiently severe to produce chronic headaches, the chances are very strongly in favor of their causing other cerebral symptoms which will confirm the diagnosis. It is not necessary, of course, that such associated symptoms are experienced by the patient. What is to be expected is the presence of abnormality in the reflexes, disturbances of function of cranial nerves, alterations in mental equilibrium, etc. It would only be with these present or the existence of a well-defined scar or depression about which the pain centres that would lead me to advise operation for their cure.

Sleep has important etiological relationship to the production and relief of headache. In the majority of cases, a good healthy sleep brings relief. Very often we have existing a vicious circle. The pain interferes

with sleep, and the loss of the latter increases the intensity of the pain by the wear and tear on the nervous system. In examining our cases we learn from the patient that any extraordinary occasion which interferes with the obtaining of the normal amount of sleep is followed by headache the next day; again, there are cases in which the headache disappears as soon as the patient gets some sleep, however short it may be. On the other hand, we meet with cases in which the headaches usually come on right after waking, or follows an accidental sleep taken during the middle of the day. Sometimes, too, the patient complains of great drowsiness, and if the patient yields to it, headache follows. It is easy to understand that headache should be relieved by the refreshing influence of a healthy sleep; but the explanation of "the worse after sleep" cases is not so easy. Most of these latter cases are examples of auto-intoxication (uricæmia?) and should be treated accordingly.

It should be our aim in every case to learn the effect of sleep on the patient. In those cases in which relief is experienced the treatment should be directed to securing those surroundings which promote sleep, though avoiding hypnotic drugs as far as possible. In the other class of cases, we must direct our treatment to the case in general. Exceptionally, we may secure good results by directing the patient to fight off sleep.

The so-called **essential headaches** are in the majority of cases "habit" headaches. Some might prefer to qualify them as hysterical or neurasthenic. The best method for treating them is ignoring them entirely, and at the same time to institute such measures as may be required for the maintenance of good general health.

The headaches of **organic disease**, as already intimated, can only be reached curatively by removing the original disease, which, in the majority of cases, is impossible. We are, therefore, obliged to fall back on palliative medication. For a time at least, we can give the patient sufficient relief by the administration of the coal-tar derivatives, especially, *Antipyrin*, *Acetanilid*, and *Phenacetin*; Acetanilid is the one which I prescribe the most frequently. In order to obtain the best results, these drugs must be given in relatively large quantities. The best plan is to start with doses amounting in the aggregate to not more than 20 grains in the course of the day, and note the results. If pain is relieved and there are none of the unfortunate physiological effects of the Acetanilid, all well and good. If, on the other hand, sufficient relief is not obtained, or the circulation is affected unpleasantly, our plans must be changed. If we have to deal only with lack of relief, we can increase the daily quantity of the drug until we make the patient comfortable. If we cannot give such a large quantity without unpleasant effects, we must counteract the physiological action of the drug by a combination with a cardiac stimulant, the best for this purpose being Caffeine. As a standard, we may give one-half grain of Caffeine with each

three and a half grains of Acetanilid. Given in this way, we may in many instances administer doses of Acetanilid that are astonishingly large, and which will relieve the headache to a remarkable degree. But there are numerous cases in which the Acetanilid will not suppress the suffering, and others in which very small doses, no matter how ably shielded by Caffeine, interfere with the circulation. Then we have no other resource than Morphia. The main objection to this drug is the danger of forming the habit, but this should not deter us in the case of patients who are down with an inevitably fatal illness.

Congestive headaches require for their relief such remedies as *Aconite*, *Belladonna*, *Amyl nitrite*, *Glonoïn*, *Aurum mur.*, *Bryonia*, *Cinchona*, *Cimicifuga*, *Ferrum*, *Gelsemium*, *Ferrum phos.*, *Melilotus*, *Opium*, *Phosphorus*, *Digitalis*, *Nux vomica*, *Rhus tox*, *Sanguinaria*, *Veratrum viride* and *Pulsatilla*.

A hot mustard foot-bath is very often a valuable adjuvant in the relief of congestive headaches, as is also the application of cloths wrung out in ice-water to the head.

Aconite.—Headaches caused by exposure to cold or to the direct rays of the sun. Sometimes associated with chills or chilly sensations and cold extremities; vascular pressure increased; sensations of fulness in the head; red face; cold extremities; tinnitus; vertigo.

Belladonna.—Headaches attended by well-defined throbbing sensations; pains usually frontal; pupils dilated; face flushed; conjunctivæ injected; cardiac palpitation; patient may be flighty or even delirious; sweat when present is hot and profuse. The pains are usually of sudden onset and disappear as suddenly as they came. Relief is experienced by resting with the head high; aggravation from low position of head. Head hot, feet cold.

Amyl nitrite.—Headaches with high vascular pressure; the affected side is paler than the sound one; vertigo; mental confusion; sensations of pressure in the forehead and temples; pain alternates between forehead and occiput. Foster speaks of it as relieving frontal headache associated with high vascular pressure as if by magic.

Glonoïn.—Suitable to cases very similar in character to those calling for Amyl nitrite. It is to be preferred to that remedy in most cases because its action is more lasting. Violent headaches in association with menstrual periods; relief from bandaging the head, especially with cloths wrung out in ice-water; feet cold; cases caused by exposure to the sun; violent throbbing with sensation of tension in the head.

Aurum muriaticum.—Congestive headaches dependent upon hypertrophy of the heart.

Bryonia.—Headaches which are aggravated by any movement, even of the eyeballs; the pain commences in the occiput, or begins in the fore-

head and goes back to the occiput; it is aggravated in the morning. *Bryonia* and *Aconite* are the principal remedies for headaches brought on by violent fits of anger.

Cimicifuga racemosa.—Headaches associated with uterine disease; attacks of headache occurring during or about the menstrual periods in nervous or hysterical women; also headaches from overstudy or fatigue. This remedy often succeeds very well when given crude, *i. e.*, in doses of ten drops of the tincture every three hours.

Gelsemium.—Headache from passive congestion of the brain; eyeballs feel sore, and the pain is aggravated on moving them; blurring of vision or even blindness precedes the headache; relieved by free urination; attacks brought on by nervous excitement or exposure to the sun. Head feels enlarged; relief by lying with head high; pain is relieved after sleep.

Melilotus.—Pain is very severe, and is compared by the patient to a sensation as if the brain would burst through the forehead. Throbbing is very pronounced. It may be associated with palpitation of the heart.

Opium.—Passive cerebral congestion; patient dull and stupid, especially after meals; atonic dyspepsia in drunkards; face suffused; violent tensive pains through the whole head; constipation; confusion of intellect and sense of heaviness and pressure through the whole head. Campbell recommends this remedy in senile headaches.

Nux vomica.—Congestive headaches associated with nausea and vomiting; headache in the morning on awakening; aggravation by coffee; constipation with determination of blood to the head; patients of irritable temperament.

Veratrum viride.—Headache accompanied by violent throbbing sensations; flushed face; tinnitus aurium; diplopia; sensitiveness to light and sounds; palpitation; rapid pulse. Ringer recommends it for the congestive headaches of the menstrual periods.

Pulsatilla.—Headaches of uterine, neuralgic, rheumatic or gastric origin. Menstruation delayed; patients of mild disposition.

Sight must not be lost of the fact that certain congestive headaches are dependent upon frequent or prolonged efforts at coughing or excessive straining at stool in constipated subjects. The methods for cure of such cases are obvious.

Anæmic headaches are met, as a rule, by very simple measures. In those cases in which the head pain attends the incurable anæmias, as pernicious anæmia, leukæmia, etc., the control of the pain is a very difficult if not indeed an unsolvable problem. In other cases, success is very likely to crown our efforts. Thus, in chlorosis, Ferrum is the remedy.

Cinchona is very efficient in cases produced by loss of blood and exhausting discharges of all kinds. This remedy is especially adapted to a type of *menstrual* headaches in which the pains are associated with a great

deal of throbbing, which may lead the physician to infer that the case really belongs to the congestive variety.

Arsenic will cure many of the chronic anæmic headaches, especially when the pains assume the neuralgic type. This drug often cures when given as Fowler's solution when it fails in potency.

Jousset looks upon *Opium* as not infrequently of use in anæmic cases.

Reflex Headaches.—The obvious method for the cure of reflex headaches is the removal of the cause, which, as stated in my work on Diagnosis, is in the majority of cases a refractive error or a muscular insufficiency. Respecting the latter, one should not be given to letting his mind run in grooves. If the truth were known, it is probable that we would find that muscular insufficiencies are far more frequently the result of ill-health than the cause of the same. Before tenotomies are performed or prisms are prescribed, the patient's constitutional condition should be investigated, and measures designed to improve the patient's systemic condition put in force. These include a proper regulation of rest and exercise, nourishing food, an abundance of fresh air, and the removal of the patient from distressing mental surroundings. The remedies required will be those adapted to the particular constitutional defect present, and in the absence of such indication, the prescription of *Onosmodium*, *Gelsemium*, or *Physostigma*, which medicines are especially valuable in weakness of the ocular muscles.

Headaches originating in the nasal cavities and the accessory sinuses are amenable only to the removal of the primary condition. The general state of the health plays practically no part in their production.

In my work on Diagnosis, I made some reference to headaches originating in disease of the ears. Continued experience has taught me that I underestimated the importance of this subject. Any variety of ear disease is capable of producing headaches or morbid cephalic sensations. Even the simple trouble of impacted cerumen is occasionally active in this respect. The most common lesion, however, is acute otitis media. The extension of a middle ear inflammation to the brain is, of course, a well-recognized condition, and the diseases thus brought about are usually attended by severe headaches. This fact has led otologists and physicians in general to fear rightly that the advent of this symptom is a very serious matter. Exceptionally, the headache is but a simple matter. Its recognition demands the exercise of one's best diagnostic acumen.

The fact that ear trouble may produce mere cephalic sensation is even less frequently recognized. Thus may be produced sensation of weight and numbness, tenderness of the scalp, heat, burning, etc. The obvious lesson is that an examination of the ears should constitute a routine part of the investigation into the causes of every case of headache with which we have to deal.

The various toxæmic headaches demand measures looking to the lessened manufacture and increased elimination of the poison. These, as a rule, include the free introduction of water into the system by drinking and high colonic enemata, which should be retained. The lessened manufacture of poisons is secured by limitation in quantity of food eaten, or the restriction of certain articles of diet which it has been proven do harm in the particular case.

Uræmic headaches call for *Ammonium carb.*, *Apis*, *Belladonna*, *Glonoïn*, *Gelsemium*, *Veratrum viride*, *Arsenicum*, *Cuprum ars.*, *Chininum arsenicosum*, and *Phosphorus*.

Lithæmic (?) headaches, *Iris versicolor*, *Nux vomica*, *Lithium carb.*, *Lycopodium*.

Rheumatic headaches, *Sodium salicylate*, *Aspirin*, *Colchicine*, *Rhus tox.*, *Bryonia*.

Malarial headaches, *Quinine*, *Arsenic*, and *Cedron*.

Syphilitic headaches, *Potassium iodide* and *Mercury*, according to the stage of the disease at which they make their appearance.

Gastric headaches, *Nux vomica*, *Podophyllum*, *Bryonia*, *Eupatorium perfoliatum*, *Iris*, *Pulsatilla*, *Sanguinaria*, and *Sepia*.

Alcoholic headaches, *Nux vomica*, *Potassium bromide*, and *Arsenicum*.

In practice one meets with a very large class of cases which come to the physician for relief of headache. Careful examination elicits the fact that the patient does not suffer from any pain whatever, but from morbid sensations, which are fully as distressing as the most severe pain. These morbid sensations include feelings of fullness, bursting, emptiness, numbness, soreness, dragging, vagueness, heat, coldness, and so on without end. The great majority of such cases are dependent upon neurasthenia and are of vaso-motor origin. The remedies applicable to these cases includes a very long list, of which the following only need be mentioned: *Zincum phos.*, *Zincum picr.*, *Picric acid*, *Argentum nitricum*, *Platina*, *Pulsatilla*, *Sulphur*, *Cocculus*, *Helonias*, *Cimicifuga*, *Ignatia*, *Iris*, *Sanguinaria*, *Stannum*, *Caulophyllum*, *Cinchona*, *Caffeine*, *Coffea*, *Spigelia*, and *Sepia*.

Migraine.

Notwithstanding the general statements made in the text-books that the prospects of curing migraine are small, we have all had the experiences of bringing about recovery in a number of cases. Too much is made of our accepted pathology of the disease, making it an essential clinical entity coming without any apparent cause then the inherited neurotic constitution. While I accept this view I feel that we should not let it run away with our judgment, and give a hopeless prognosis. As the majority of cases are first manifested in very early life, we have opportunities for

regulating the patient's habits at a time when he is most susceptible to education. In doing this, we must use discretion, for education may be too extreme, and the patient may become a chronic invalid of other than the migrainous sort by reason of constantly living in the fear of disease; or his excessive abstemiousness may bring about general malnutrition.

The education of the patient is one of the important factors. It is easy enough to advise against too much study or cultivation of the mental faculties. But one should remember that migraine has been called the disease of scholars. No other ailment has numbered so many distinguished men of letters among its victims. To deprive the world of such talent is a serious matter. Each case must, therefore, be studied on its merits, and only those in which application to books and literary and scientific habits are seen to do damage, even of the mildest character, should be forced to abandon their favorite pursuits. The ability of these patients is usually such that study and mental occupation are not the drudgery they are with the average individual. Of course, in the abstract, intense application to books and sedentary habits are bad. As a general rule, it is a good plan to advise the patient to select an occupation that will keep him out of doors most of the time. If he still be occupied with his school work, he should avoid competition in scholarship.

One should not follow any hard and fast rules in laying down a diet for these patients. Most of them eventually find out that certain articles of food are likely to bring about an attack. It sometimes happens, also, that these alleged dietetic indiscretions are of an absurd character, and test our credulity. Nevertheless, unless the patient carries his ideas to the extreme of avoiding so many things as to endanger his health by his abstemiousness, we do well to respect his views. In many instances, it may prove to be a wise plan to encourage the patient to gradually become accustomed to the harmful articles, hoping that in time he will lose his idiosyncrasy by habituation. As a general rule, a diet that approaches the vegetarian is the best one. The extreme views of Haig and his followers that migraine is an uric acid disease, and its victims should not be permitted any meat whatever, is not sound doctrine. Such teachings apply, of course, to many cases of chronic recurrent headache, but not to the disease under consideration.

In every case it is important to look after the functions of the stomach and bowels. As far as possible, this should be done by hygienic rather than by medicinal means. The bowels should be educated to move regularly. If constipation occurs, even for a short time, it should be treated on the principles laid down in the section on chronic constipation. Under no circumstances should Sulphate of soda or Carlsbad salts be administered, as they are too depleting.

The auto-intoxication theory of the origin of migraine has proven very

attractive to many physicians. It deserves only partial respect. Just so far as the patient's habits and symptoms suggest such a condition should the therapeutic measures advised be governed accordingly.

Of course, the patient must be instructed to live in well-ventilated rooms. He should make it a practice to be out in the open air a large part of each day.

While there is no etiological relationship whatever between true migraine and refractive errors, nasal hypertrophies, dental diseases, etc., nevertheless, the eyes, nose, throat and teeth should be investigated, for there may exist lesions which depreciate the general health, and thus favor a greater frequency of recurrence of seizures than would be the case otherwise.

During the paroxysm, the patient should be put to bed. The diet should be of the lightest character possible. It is a matter of small importance if the patient fasts, unless the paroxysms are very frequent and long lasting. For relief of the pain, the coal-tar derivatives may be appealed to. Antipyrin seems to be the most efficient, but it also requires more care in its administration. I have derived most satisfaction from a mixture of Acetanilid and Caffeine in the proportion of three and a half grains of the former to one-half grain of the latter, four to eight grains of the mixture being given as the initial dose. The smaller dose may be repeated in one hour, but not again until the patient's susceptibility to the drug is positively known. Phenacetin in ten grain doses is a very efficient palliative in many cases. The above-mentioned drugs are generally regarded with some suspicion, owing to the damage they have done when incautiously or indiscriminately used. Prescribed with care, they accomplish much in the way of palliation. They are far superior to Morphia, which has the positive disadvantage of bringing on the Morphia habit. If administered early in the course of a seizure their effects are much more satisfactory than when they are delayed until suffering is extreme and the stomach has lost its power of absorbing them. Some patients find in an effervescent solution of Bromosoda with Caffeine a most efficient remedy. In some few cases the repeated administration of Acetanilid and its congeners, by palliating the pain decidedly lessens the frequency of the paroxysms and ultimately break up the attacks altogether.

Some patients find great relief from applications to the head. Sometimes it consists merely of a tightly-applied bandage or girdle; still others demand ice cold, and still others hot applications. Which of these measures is efficient in any given case can only be determined by investigation or observation.

Massage was used by Nordstrom in cases in which examination showed subcutaneous thickenings, tenderness or irregularities in the scalp muscles. These cases have no hemianopsia, scotomata or other symptoms characteristic of the true migraine.

Recent cases call for *Belladonna*, *Gelsemium*, *Calcarea*, *Ignatia*, *Spigelia*, *Nux vomica*, *Sepia*, *Silicea*, and *Stannum*.

Belladonna is suited to young slender subjects, of nervo-sanguine temperament. There is the characteristic throbbing pain, flushed face, aggravation from dependent position of the head and other well-known symptoms.

Sepia and *Calcarea* are valuable remedies, indicated, however, on constitutional conditions rather than on any specific characters to the pains. The *Calcarea* patient is of a lymphatic constitution. The *Sepia* patient is usually a woman, of sallow complexion, subject to uterine disturbance and leucorrhœa. The pains are of a throbbing character and shoot upward or from within outward. There may be a jerking of the head backward and forward.

Ignatia is the remedy for hysterical patients, especially when the pain assumes the characteristics commonly known as *clavus*. The attacks are brought on by emotional influences. Slight clonic spasms of the hands may accompany the paroxysms, which generally pass off, accompanied by a free flow of urine. The face is pale during the attacks.

Stannum is a favorite remedy with Hughes. Its pains commence gradually and disappear as gradually as they came.

Sanguinaria and *Iris versicolor* are the favorite remedies of most practitioners for the attacks themselves. They are also valuable remedies to be administered in the interim as curative agents. Under *Sanguinaria* the attacks recur periodically, the pain commencing in the occiput and settling over the right eye, with nausea and vomiting. Sometimes the pains begin in the forehead and vertex, on the right side. Usually the attack begins in the morning, and lasts until evening. It obtains marked, if not complete, relief by sleep. As under *Ignatia*, it often passes off with free flow of urine.

Iris was the favorite remedy of Dr. James Kitchen. The pains are situated mostly in the forehead or right side of the head, and are aggravated on beginning to move, and relieved by continued motion. They are associated with lowness of spirits, nausea and vomiting. Vision is nearly always disturbed. Both *Sanguinaria* and *Iris* are often prescribed empirically.

Sulphur is recommended by Hughes as the remedy for cases of migraine occurring in patients of gouty diathesis.

Cannabis indica is highly recommended by Hale when the attacks recur periodically every week or two. The pains are agonizing, and the patient delirious or unconscious at times. The attacks prostrate the patient greatly. The face is pale; the head cool; light and noise aggravate the pain. No vomiting occurs. This remedy is the favorite old-school remedy at the present time. It is administered in quarter of a grain doses of the

extract, three times daily ; this dose to be gradually increased until the limit of the patient's susceptibility is reached. It is claimed by Seguin and others that the tendency to recurrence is thus greatly lessened.

Glonoïn is certainly a valuable remedy in some cases, especially when the disease is associated with marked arterial tension.

Electricity is of aid in some few cases. Static electricity, applied by the soufflé to the head, has cured or relieved quite a number of patients. Galvanism to the head has accomplished but little beyond slight temporary relief.

In quite a large proportion of cases, migrainous seizures may be made much less frequent by the regular administration of the bromides. The dosage should, however, be much less than in epilepsy, twenty grains three times daily representing the maximum. This treatment should not be instituted until the ordinary curative measures have failed.

Myotonia Congenita.

Myotonia congenita, commonly known as **Thomsen's Disease**, is incurable. The remedy that has exhibited the greatest influence in controlling it is regular and systematic exercise. Inasmuch as the majority of cases occur in persons who are highly neurotic, it is wise to suggest that they live, so far as their circumstances will permit, a quiet life undisturbed by trying influences. As the disease runs in families, those who are liable to it should be forbidden to marry, or, if they refuse such advice, they must be warned against procreation.

Angioneurotic Œdema.

Under no circumstances can the treatment of a case of angio-neurotic œdema be of a specific character. More than in most diseases must the cases be treated each as a law unto itself. As a rule, one finds the patient to be of a neurotic habit. In the majority of such cases, rest and careful attention as to the diet will accomplish wonders. The term rest as applied must be qualified, for it is very seldom that we find the indications such as to demand a long stay in bed as in bad cases of nerve prostration. Usually, it is sufficient to interpret the term to mean a change from the patient's routine daily existence—a vacation under congenial surroundings, in other words. The dietetic regulations consist in feeding up those patients who are under-weight, forbidding certain articles which have no direct bearing on the general nutrition. In the case of stout patients, exercise is required more than is physical rest, and the diet should be restricted.

During the attacks, if at all bad, patients should be kept in bed. Symptoms present in my experience have indicated *Apis*, *Ferrum* or *Strychnia*. The great danger of this disease is the occasionally sudden involvement of the glottis in the œdema. In some few instances, this accident has resulted fatally before a tracheotomy could be performed.

Raynaud's Disease.

The indications for treatment in Raynaud's disease are to maintain the general health at the highest possible standard, to improve the circulation in the affected parts, to lessen pain, and aid the separation of sloughs when gangrene has taken place. The general health is to be maintained in good condition by paying attention to indications as they arise. The patient's diet should, as a rule, be of mixed character. Clothing must be warm, because it is undeniable that exposure to cold has a decided influence in precipitating and aggravating attacks. Depressing mental impressions are always deleterious. In view of the many uncertain affairs of life, one cannot keep unpleasant matters away from patients; but the physician can do much by displaying self-confidence, and giving assurance to aid the patient. That psychopathic measures should have a good influence in Raynaud's disease seems remarkable, but of the truth of this statement I have no doubt.

The circulation in the affected parts may be aided by keeping them at rest, and in a position that will favor the return circulation; by wrapping them up in cotton-wool to preserve the local warmth; and by mild or gentle massage. The injunction that the massage be gentle is very important, for rough manipulations have converted a threatening into an actual gangrene. When the attack comes on during the cold seasons, the patient should be sent to a warmer climate, if the family finances will permit of it.

In most instances, the measures designed to improve the general health and aid the local circulation are sufficient to keep pain within reasonable bounds. In some cases, the pain becomes the principal feature, and resists all ordinary measures. It is then that we are obliged to resort to analgesics; at first the coal-tar products. If they fail to give the proper result, we must fall back on Morphia, but with great misgivings. The conditions existing are just such as would favor the drug habit. At the best, the analgesics are not satisfactory in Raynaud's disease, because they must be given over such a prolonged period of time that serious hæmolytic changes or nervous depression results. When Morphia is given hypodermically, it should never be injected into the tissues of the affected extremities, because it may excite a gangrenous process. Locally, 50 per cent. Menthol solution in alcohol applied to the parts, which should then be wrapped in cotton-wool and covered with oiled silk, has been found very efficacious.

Electricity has been as highly extolled by some as it has received the contempt of others. The methods in common use are the following:

Spinal galvanization, which is performed by placing a large flat negative electrode over the sacral region, while the positive electrode is applied

to the cervical spine. The latter is *very* slowly moved down until it approaches within two or three inches of the negative electrode. This procedure should take about five minutes. The greatest care should be observed to have the movement and pressure very steady in order to avoid interruptions of the current.

The other method of applying galvanism consists in applying the negative electrode to the portion of the spinal column from which the nerves to the affected part emanate. The positive electrode is placed in a basin of warm water, in which the diseased member has been placed.

Glonoïn and *Amyl nitrite* have been recommended because of their ability to dilate the smaller arteries ; but the results have not been satisfactory.

Secale and *Arsenic* should do more for the disease than any other remedies. Their ability to produce a dry gangrene from vaso-motor disturbance makes them homœopathic to Raynaud's disease. *Argentum nitricum* may also be mentioned. W. F. Baker* speaks very highly of *Agaricus* ix. The benefit obtained was the greatest in the winter months, when patients with Raynaud's disease are at their worst.

Riggs† praises *Quinine* as of unquestionable value. Short thinks that *Thyroid extract* has done good service in his cases.

The surgical treatment of the gangrene is conducted on ordinary surgical principles. Operation should not be performed until there is a well-defined line of demarcation, because the gangrenous process is usually much less in extent than the pre-existing conditions would seem to indicate.

* *Hahnemannian Monthly*, vol. 38, p. 400.

† *Reference Handbook of the Medical Sciences*, vol. v.

CHAPTER XXV.

DISEASES OF THE MIND.

THE question whether or not the general practitioner *should* ever treat cases of insanity is a legitimate one for debate. Unfortunately, what he *should* and what he is *obliged* to do are very different matters. We must all admit that there are cases of which he must take charge through their entire course, however much he may desire to rid himself of their responsibility. In the majority of instances, however, it is the general consensus of opinion that the interests of the patient demand that the cases of curable mental disease should go to the alienist at as early a date as possible, and with this opinion the majority of physicians and laymen will agree. On the other hand, no class of practitioners sees these cases so early in their course as the family physician, and none are so competent to make an early diagnosis as they. It is the family physician only who is acquainted with the patient in his normal state, and is able to make comparisons with his mental abnormalities. It is evident, therefore, that nearly all cases of insanity must come under the medical man's eye in their incipiency. It is essential therefore that he be thoroughly acquainted with the details of the treatment of mental diseases. This is my explanation for the unusual course of introducing a chapter on insanity in a work devoted to general medicine.

Among the early manifestations of insanity is disturbed or absent sleep. The importance of this symptom as a precursor of mental disorder is not sufficiently appreciated. Of course, every case of sleeplessness does not develop insanity; but the symptom must be regarded as a dangerous one, to say the least. Insomnia, moreover, is not only an initial symptom, but by interfering with brain rest will most certainly aggravate mental disease.

Insomnia.

Given a patient with insomnia, the first duty of the physician is to make a thorough anamnesis and physical examination of the case. Especially must he pay attention to the most important two etiological factors, namely, mental overstrain in its various forms and disturbances of the gastro-enteric system. Under mental overstrain is to be considered prolonged worry, anxiety, grief, misfortune, and overwork. Much of course depends upon the patient's temperament; for some persons are rendered sleepless by the slightest excitement, while others sleep soundly no matter how great may be their daily annoyances.

As to gastro-intestinal disorder, we all know the bad influence exerted on certain individuals by late meals, flatulence, epigastric discomfort, constipation, etc., in disturbing the nervous system generally, and the ability to sleep in particular. Not so many of us, on the other hand, admit practically that insomnia may result from very slight digestive disturbances. Indeed, disordered stomach with slight functional error is so frequently one cause in most cases, that the treatment of insomnia in general should consider the question of diet regulation as a routine measure.

In laying down the dietetic rules, one should never be dogmatic. Each case must be studied on its merits. Just as some are damaged by over-feeding, so there are many who are under-fed; in fact, what is often required to correct the sleeplessness is a late supper of light food. The adage of "one man's meat, another man's poison," applies to the treatment of insomnia.

It may be set down as a practically universal rule that tea and coffee should be denied *in toto*. It is only occasionally that they may be permitted even once daily. In no case can they be said to have a therapeutic value.

The use of *tobacco* must depend upon the study of the case. In persons who have never indulged to excess, and in whom no perceptible evil influence is exerted, there can be no objection to its use. In very many persons, one or two cigars daily act as a sedative. Excessive indulgence in *tobacco* is always bad. Many cases of insomnia are really dependent upon it, and disappear as soon as the patient goes to total abstinence.

Stimulants are useful in some cases, damaging in others. Their adaptability to cases in hand can only be determined by experiment. There are many individuals who find that a bottle of ale or light beer with a cracker or two brings restful sleep. On the other hand, we find persons who are rendered excitable by all alcoholics, however mild. The cases most likely to receive benefit are those of senile restlessness and insomnia. In youthful subjects in whom the results are good, the habit of regular drinking at night is not to be encouraged after regular restful sleep has been attained.

Sleep is a habit which comes to us all with almost clock-like regularity each twenty-four hours. We succumb to its embraces at the same hour; and we wake regularly each morning. In this daily cycle habit is everything. Undue exertion, excessive mental application, and undue indulgence of various kinds, disturb sleep. It is obvious, therefore, that if we wish to succeed in the treatment of insomnia we must enjoin upon our patients regularity of habit. Especially must we have determined the insomnia and eliminate its cause. It is of the greatest importance that we remember that it does not act automatically. This can be

done by providing genuine recreation, which takes the patient's thoughts from self. For the same reason we supervise the intellectual rest, prescribing quiet reading. The best exercises for the sleepless are those which are taken in the open air. The good influence of driving, riding and cycling are well known. *Fresh air is a good hypnotic.*

Some patients are sleepless for no other reason than a morbid fear that they cannot sleep. Patients can often be induced to sleep restfully after the administration of a placebo. With them, faith is everything.

Some patients only think themselves sleepless. This class is a very difficult one to treat, for their illness is imaginary. Our first object should be to get the patient to understand that after all he does sleep, though disjointedly; at the same time, we should treat associated conditions.

Among the hygienic measures to be advised for the sleepless are a quiet retired bed-room, which should be well-ventilated; the bedding should be well-arranged; no lights should be permitted. *Hydropathic* treatment is admittedly of the greatest value; but one can never tell in advance which method of treatment will do the most good. Text-books generally recommend the warm bath or hot wet-pack; and in many cases these are invaluable. Unfortunately, there are many patients in whom the succeeding reaction following their application leads to even greater sleeplessness than before. Hence it is that we are obliged to recommend cold baths, especially in the morning on rising. We may also prescribe them in the evening, especially if reaction is good and prompt. Other hydriatric measures recommended for insomnia include the cold sitz-bath; and having the patient sit with feet in a tub and the knees and legs bared, cold or iced water being poured over the knees and feet.

Hypnotics are to be used in insomnia with the greatest circumspection. Other things being equal, we should endeavor to get along without them. In some cases they are necessary. Concerning the action and methods of administration of this class of drugs, the reader is referred to page 811.

Among our homœopathic remedies, *Passiflora incarnata* is very frequently and efficiently used. It seldom gives good results in smaller doses than thirty minims of the tincture administered three to four times daily.

Other remedies to be studied include *Ambra grisea*, *Belladonna*, *Cocculus*, *Cuprum*, *Cypripedium*, *Digitalis*, *Kali bromatum*, *Nux vomica*, *Phosphoric acid*, *Stramonium*, *Sulphur*, *Zincum metallicum* and *Zinc phosphide*.

Treatment of Insanity in General.

Prophylaxis.—Undoubtedly, much could be done in the way of preventing insanity in those predisposed to it by inheritance and temperament, if some attention is paid to the matter by medical men. The most important factor is the proper education and bringing up of children presenting neurotic manifestations. Remarks on this subject have been made when dealing with the treatment of hysteria.

The children who are fit subjects for prophylactic treatment may be divided into classes, namely, those who are stupid, more or less wilful, forgetful, ill-tempered and oftentimes malicious; the second class includes children who are precocious, quick to learn, but who, despite their apparent brightness, lack what might be called a "balance-wheel." They are not like other children in their inclinations. The principal points in their management include play in the open air, good substantial nourishment, moderation in study, and plenty of time for sleep. When, as frequently happens, such children exhibit an unusual aptitude for certain work or in a particular direction of art, they should be inhibited following the one-sided mental education necessary for their development in that direction. It is needless to remind my reader of the clinical biographies of the many musical prodigies, blind-fold chess-players, artists, etc. Occasionally one survives the forcing process and becomes famous and eccentric; the majority sink into mental invalidism and obscurity. Education should, so far as possible, take the direction of manual training. The literary education should be of a general and practical character.

Such children are commonly the offspring of neurotic parents. Home associations are, therefore, not of the best. It is a good plan, when financial circumstances will permit, to have them educated at judiciously selected boarding-schools.

Prophylaxis of insanity also includes the direction of the life of the neurotic pregnant woman and the care of the infant. As to the mother, the important items include abstinence from alcoholic stimulants, nerve sedatives, and drugs generally during the parturient period.

Infants themselves should never be given sleeping potions. Many an adult to-day owes his mental obtuseness to this selfish practice on the part of his parents.

Coming to the choice of a means for earning a livelihood, the neurotic should choose a calling which demands physical activity in the open air, and avoid those which demand excessive brain work or a sedentary life. Many times have I met with high-grade neurotic young men who have chosen to study medicine. The results have been all the way from failure and incorrigible eccentricity on the one hand to incurable insanity on the other; and the same remark applies to those who have studied for the pulpit and the bar. Young women should especially be cautioned against the so-called higher education and adopting teaching or trained nursing.

Advice as to the marriage of neurotics and persons having a family history of insanity is valuable, but is never appreciated. Certainly, I would never recommend marriage as a cure for these people, and for two reasons: 1. It is scarcely ever successful; 2. It is almost criminal to burden another person with the care of an insane wife or husband, to say nothing

of the added risk of bringing additional degenerates into the world. On the other hand, insanity and the neuroses are so apt to be transmitted by heredity that I believe it to be a good rule to advise against the marriage of any individual who has ever been insane. Even though such persons should be so fortunate as to never have another attack, we should remember that there is a risk in their procreating. Their offspring, moreover, is likely to be badly trained, for they themselves are apt to be of unstable nervous organization under the best of circumstances.

As to individuals who come from families with an hereditary taint, one must be governed by circumstances. The neurotic constitution is especially liable to be transmitted by women; hence, it is wise to advise against their marriage, unless they are unusually stable in their nervous organizations. Men of such families may be permitted to marry if the woman possesses a good family history.

Consanguinity is not to be regarded as a barrier to marriage unless there is a neurotic strain in the family; that present, marriage should be positively forbidden.

Chronic alcoholism or uncontrollable appetite for liquor should be accepted as a strong contra-indication to marriage. Inebriety is a neurosis, and it is quixotic to marry such persons in the hope of working a reformation.

The greatest care must be exercised in advising persons who have had one or more relatives insane, lest in our anxiety for their welfare we start their minds dwelling on their possible infirmity, and bring about the identical trouble we desire to avert. It is best always to give such advice as may be necessary in a general way without suggesting any possibility of the onset of mental disease.

General Treatment.—Isolation.—Practically all cases of insanity are best treated away from home and relatives. The places at our disposal include hospitals for the insane, private sanatoria, general hospitals and nursing homes. In the selection of one of these places we must be guided very largely by the finances of the patient and the prospects of cure. Given a case which offers a reasonable hope of an excellent recovery, the family is justified in going to any expense within the limits of reason to accomplish the best results possible.

People of limited means have no other recourse than one of the large asylums under State supervision. As a rule, they are well though economically conducted. Unfortunately, they are apt to be overcrowded; hence, they should not be patronized as long as circumstances will permit otherwise.

The semi-public institutions are decidedly more efficient. They are seldom overcrowded. Their management is free of political affiliations. Many of them are heavily endowed; hence, they can offer the poor unfor-

tunate a good return for his money, Some of them, however, have too small a staff for the immense service.

The greatest objection in the State and semi-public asylums is found in the necessity for formal commitment papers, and the unjust stigma which rests upon their patients after discharge. Most of this objection would disappear if these institutions were given the name of Hospitals for Nervous Diseases, instead of "Asylums for the Insane."

Of late years, there have grown up all over the country numerous small sanatoria for the private care of the insane. Most of these institutions are under the control of physicians who have had experience as assistant physicians in various public hospitals, and hence by training should be thoroughly equipped for their work. Many of them are established on a firm basis as a business investment, and are annually growing in strength and efficiency. The patients are usually so few in number that the physician in charge can well afford to give them every attention and individualize his cases. The attendants in charge are also drawn from a better class than those on duty in the free institutions. The price charged for the care of the patients is sufficiently high to make it possible to give them all necessary luxuries or amusements. The large ratio of attendants to patients makes it possible to give the patient more apparent liberty than is afforded in the larger hospitals, where patients are kept constantly under lock and key. The latter necessary expedient of the hospitals has always seemed to me to be a barrier to the recovery of patients, for being behind locked doors must have a depressing influence. The care given the patients in sanatoria is usually so strictly personal, that it is exceptional only for them to be in contact with other insane subjects. The small number of patients makes it possible to select suitable occupations for all.

When family circumstances will permit, I believe it to be the best plan to place the patient under the care of an alienist at a private nursing home, in city or country, according to the nature of the case. The nurse or nurses in charge should be selected for their tact and experience. The only objection to this plan of treatment is the very great expense incurred, such indeed as is within the means of very few persons.

Families very rarely consent to prompt isolation of the patient. Hence, physicians are obliged in many instances to temporize at the patient's home. The expense of this is scarcely less than in a nursing home, for the patient must be under the care of trained nurses and there are many incidental expenses. It is highly important that members of the family be excluded from the room, for they practically always exert a disquieting influence on the patient. Precautions must be adopted according to the nature of the ill to whether it is one of mania, melancholia, paresis, etc.

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an insane patient or turning him over to

another physician or nurse, it is an important matter for one's reputation that a careful inspection of the patient's body be made for bruises and other injuries. The presence of such does not necessarily indicate that any one is to blame. Very slight contusions cause ecchymoses with many of the insane. Certain forms are especially prone to so-called spontaneous fractures. The patient's own violence may produce fractures and dislocations, or, in following out the lines of their delusions, they practice self-mutilation. If the physician feels that an examination for the above purpose will be resented, he may suggest a thorough warm bath under the supervision of a nurse who can present a positive or negative report according to circumstances.

There are certain symptoms and conditions which require special attention among the insane. These will next receive a brief consideration.

Malnutrition.—It is in exceptional cases only that the mentally diseased are in good nutrition. This is readily accounted for by the small quantity of food they have taken, the great waste entailed by their mental and physical activity, and a depreciated condition of the gastro-intestinal tract.

Feeding then becomes a very important item in their care. To get them to take a proper amount of food requires an understanding of the causes leading to the starvation. Some refuse food because of fear of poison contained therein. This difficulty may be readily overcome in many instances by ordering food which is put on the table in nature's original package, as eggs in the shell, baked potatoes, oranges, apples, etc. A tactful nurse can after gaining the confidence of the patient succeed in enlarging the daily list until the quantity is sufficient to bring nutrition up to the normal standard. She may give the patient confidence in the viands by partaking herself of such portion of the same as may be assigned to her by the patient.

Failure ensues in some cases, and then "*feeding by the tube*" becomes necessary. The readiest means for this purpose is "**the nasal tube.**" The tubes for this purpose can be purchased at any large surgical supply house. They are usually thirty inches in length, and of No. 18 to No. 24 French gauge. A rubber funnel is attached to one end. To insert the tube, the patient may be either sitting or recumbent. If he inclines to resist, he should be firmly confined or kept quiet by a restraining sheet or the arms of attendants. The operator determines just how much of the tube must be inserted to surely enter the œsophagus. He then lubricates it with milk or water, and passes it back through one of the nasal passages. Up to this time in the procedure, the patient's head has been held backwards with the chin forwards; but now when the end of the tube strikes the posterior pharyngeal wall, the chin of the patient is brought forcibly on the chest. The operator continues to push the tube, which can now go

in no other direction than the œsophagus. After this period, it is a simple matter to push the tube all the way into the stomach. It now becomes a simple matter to administer such nutrients as milk, broths, milk and eggs, etc. The fluid should be poured in as slowly as circumstances will permit. The maximum quantity to a feeding should be one quart.

Some physicians pass the tube only as far as the œsophagus. If the terminal end is properly placed, nourishment can be introduced as readily as by the complete method above prescribed. If, however, the attendant makes the mistake of inserting the tube into the larynx, and then pours in the nourishment, there is great danger that the latter will necessarily enter the air-passage and do great harm. I once saw a case of acute mania with gangrene of the lungs which resulted from this accident.

If objection is made to the tube, **nasal feeding** may be accomplished by simply pouring the nutrient slowly into the nasal cavities, whence it will pass into the pharynx, and must be swallowed.

Feeding by the ordinary **stomach tube** may also be employed. It is necessary that the patient's jaws be thoroughly secured by a suitable gag before introducing the instrument. As a rule, the nasal tube will be found more convenient than the stomach tube for the great majority of insane patients.

Diet.—The feeding of insane patients differs in no particular from that of other invalids, excepting so far as inducing them to take nourishment is concerned. Our main object is to nourish. To this end we follow the indications afforded by the general state of nutrition, the condition of digestion, and the appearance of the tongue, and the strength of the patient. In accordance with these we give the patient the best possible.

Constipation.—Attention to the bowels is especially important in all cases of insanity, but especially so in those attended by melancholia. The sluggishness of function which is so common in mental diseases may lead to such prolonged neglect of the bowels that it is a very easy thing for impaction of fæces to take place. This accident occurring requires the same measures for its relief as those that have been recommended for the removal of fæcal impaction in the sane.

Throughout the course of the mental illness, care must be taken that the bowels move daily. If they do not, relief should be secured by the administration of a soap and water or a glycerin and water enema, or the administration of Castor oil, Calomel, Cascara or other purge or laxative. *But the bowels must be moved regularly.* It is really astonishing to note how much better the patient feels when daily evacuations are the rule.

Retention of Urine.—The advice already given respecting the importance of watching for retention of urine in the apoplectic apply with equal force to the management of insane patients. Sometimes this symptom is the result of the confused mental state; and sometimes it is due to

paralysis of the detrusor. If unrelieved, it ultimately changes to incontinence by overflow. The treatment is catheterization under antiseptic precautions.

Indigestion.—The disordered digestion of the insane is usually dependent upon atonic dilatation, and is to be treated according to the principles already laid down for managing that condition. Flatulence, anorexia, epigastric discomfort, vomiting, etc., must all be treated according to symptomatic indications.

Circulatory Failure.—This is not an uncommon cause of death among the insane. It may be due to malnutrition, arterio-sclerosis, myocardial disease, auto-intoxication, or to gross cerebral disease. It must be treated according to etiologic indications and by remedies prescribed symptomatically. In the treatment of the insane, mental symptoms predominate so markedly above all others that those of physical origin are likely to escape attention ; thus it is that the insane sometimes die suddenly when least expected.

Masturbation is very common among the insane and is very difficult to prevent. Confining the hands in mufflers is the favorite device. Other expedients that have been proposed include the application of blistering solutions, as Iodine tincture and Cantharidal collodion to the genitals. Notwithstanding these devices, the habit continues, and nothing can prevent it excepting the constant supervision of relays of nurses. The sexual excitement is purely mental. Such operations as oöphorectomy and clitorrectomy result in failure, as a rule.

Suicide.—When a patient exhibits a suicidal disposition we have but two alternatives, namely, institutional treatment or the constant supervision of faithful nurses, one of whom shall never leave ; always be in the room. It is not safe to leave the patient alone for a second or for any excuse whatever. The ingenuity and persistence displayed by these patients is marvelous. One of my patients threw himself out of the window while the nurse stepped out of the room for less than a minute. A case under the care of a confrère secreted his dinner-knife in the bed-clothing, and with the nurse in the room severed the femoral artery. Before his act was discovered he was beyond help. Cases without number have been reported where patients have drowned themselves in bath-tubs and wash-basins, or strangled themselves by tightening cords about the neck. Some have crammed large boluses of food into the pharynx.

Patients must be studied lest they practice self-mutilation. Ordinarily, they go no further than picking the skin until it bleeds, pulling out hair, and biting the flesh of the arm. Occasionally they do not hesitate to mutilate the genitals or amputate a limb. They may proceed to this extreme with the aid of broken-glass crockery after all cutting implements have been kept carefully out of their reach.

Mechanical Restraint.—Those experienced in the care of the insane seldom resort to mechanical restraint in the case of violent subjects. Of course, it often proves necessary for short periods with patients who exhibit a disposition to damage themselves and others and the nursing force is inadequate. In the majority of cases in which it is practiced it is more conducive to the peace of mind of the nurse and family than to the necessities and welfare of the patient. When employed it should be for a limited period each day. If used judiciously, patients will accept it for their good, and I have even known them to ask for it when they felt themselves getting beyond control. The best apparatus for mechanical restraint are the lock-straps and the restraining sheet. Nurses should always report to the physician in charge the various times when they were obliged to use restraint.

Homicidal and Destructive Tendencies.—Homicidal tendency is to be feared mainly in two classes of patients: 1. In the acutely manic with furious delusions: 2. In the paranoiac. In the former, the activity of the mental alienation and the necessity for watching the patient closely, the evident necessity for removing all weapons and implements of destruction, render any harm in this direction exceedingly unlikely, although we hear occasional reports of such patients killing their attendants or members of their family. It is of course possible that the acutely manic may conceal their delusions for a time. Thus family and friends are not on guard; indeed, the serious state of affairs may not be suspected until the harm is done. As to the paranoiac, we have a more serious peril. This class of the insane are oftentimes able to conceal their delusions with infinite cunning. In all other matters, excepting those relating to their delusions, they are mentally sound. It is not surprising, therefore, when they act upon their murderous impulses that laymen should honestly question the insane origin of their crimes. Three times have I seen such patients liberated from asylums by the ill-advised acts of their friends, against the experienced judgment of physicians and alienists, only to be recommitted when their subsequent conduct has shown them unsafe to be at large. That more murders are not committed by this class is probably due to the fact that the patient is able to exercise a certain amount of self-control. One patient who comes occasionally under my observation has separated from his wife as the result of his delusions. He asserts that their child is not by him. He declares that he will kill her. With insane inconsistency, he is greatly attached to the child. The majority of his family would have had this patient committed long since; but others insist that he is a man of bad temper, and that he can control himself. Thus far he has succeeded in so doing. This is a good example of what the medical man has to contend against when dealing with the so-called border line cases. Another patient after committing several murderous attacks on his wife, to whom he had been devoted for years, was refused commitment by a lunacy commit-

tee, only to shoot himself within three weeks of his discharge. Examples like this are numerous beyond the conception of those inexperienced in dealing with insanity. They are mentioned here that the medical man may protect himself and clients.

Clothing.—The method of clothing insane patients must be determined by the character of the case. We have to consider this question first from the standpoint of warmth and protection; and, secondly, from that of appearances. The majority of the insane have their nutrition undermined; hence, it is of paramount importance that they be warmly clad. Hence it is that they should have good woolen underwear and substantial clothing, the weight of which must be graded according to the weather. In fact, in caring for them, we must consider the question of shoes, night-dress, bedding, as we would with the ordinary invalid. On the other hand, we have patients who, though needing protection, do not require the heavy flannels that are necessary for those who are illy-nourished.

The too prevalent custom of dressing the insane in any old cast-off garments on the principle that anything is good enough is applicable only to patients of dirty habits and destructive tendencies. Good clothes are pleasing to most people, and oftentimes serve to increase the patient's self-respect. When, therefore, the circumstances warrant it, we should make use of this fact as part of the psychic treatment of the mentally deranged.

Patients who are destructive of their clothing must be clad in canvas goods or strongly quilted gowns.

Diathetic Conditions.—Rheumatism, gout, syphilis, tuberculosis, indigestion, diabetes, and other conditions too numerous to mention, must always be taken into consideration in the treatment of the insane. In the majority of the cases, they have little or nothing to do with the illness. Sometimes, however, direct attention to them will bring about good results.

Open Air.—Experience teaches that the more insane patients can be kept in the open air the more rapidly will they improve. We should, therefore, arrange for suitably adapted walks each day. In inclement weather they should be kept out on verandas as much as possible. As soon as strength will permit, they should be given occupations requiring but little headwork, but which necessitate the open-air life. Whenever possible, their recreation should be out-of-doors.

Rest and Exercise.—The question of rest and exercise is one of the difficult problems to decide in individual cases. The disposition on the part of the laity and of many physicians is to order physical activity beyond all reason. The majority of patients thrive on "the rest cure" for periods ranging from two to four weeks, after which time they should be encouraged to go about more and more each day. Prolongation of the rest beyond the limited period usually leads to relapse. On the other hand, we find some restless and maniacal patients who are greatly benefited from the

first by forced exercise in the open air. The best plan for the general practitioner is to start the patient with the rest cure, and be guided by results before ordering a change.

Psychotherapy.—When applied to the management of the insane this term means much more than it does when ordinarily employed to indicate treatment by suggestion, hypnosis, etc. Hypnosis in the treatment of the insane is practically valueless. Suggestion is of importance. Moral management is the one factor which stands out as of more importance than all other therapeutic factors combined. The mentally deranged presenting, as they do, such widely differing clinical pictures engrafted upon many types of temperament and in persons of diverse surroundings, no set rules can be formulated for the management of all cases. There are certain data, however, which apply to the majority of cases, and it is to these I now refer. The first principle to be inculcated is strict honesty and veracity in dealing with the patient. Unfortunately, this is the one most frequently violated. I know that physicians will insist that it is impossible to act honestly when dealing with a diseased mind; but experience has taught me differently. When conversing with a patient concerning her delusions I was asked by the patient why she should have these ideas if they were not true. I replied that her mind was ill, and that the ideas would disappear on her recovery. She then promised to try to disabuse herself of her delusions. The turning point of the case was from that time. Of course, it does not do in many cases to be too frank and tell a patient the equivalent of insanity. With tact and experience, however, we can usually tell how we should proceed in this direction. On the other extreme, I know of an instance in which it was decided to commit a patient. To induce her to go quietly to the asylum she was told an outrageous falsehood as to the person she would meet at the end of her drive. It took her medical attendants many months to overcome the influence of that benevolent (?) falsehood. The popular conception that the insane can be deceived *ad infinitum* is unsound in theory and false in practice. Once lose their confidence and the physician is powerless. There is no better way for him and attendants to get into this unfortunate situation than by the practice of deception. One of my nurses, who has had a long and successful career in managing the insane, makes it a matter of pride that she has never been obliged to lie to an insane patient. This woman, however, takes a deep interest in this class of cases, and her heart is in the work. This, of course, adds to her efficiency. If a nurse is put in charge, the patient should know her for what she is. To introduce her as a maid, secretary, or some hypothetical individual is harmful, for the deception will soon be discovered, and then where are we? Again, those who have had experience cannot help entertaining feelings of amusement at the well-meant efforts of a sympathetic family to divert the patient from her delusions. Candidly, I have often been at a loss at such seances

to determine which one of the assembled party was the patient. Truth, patience, kindness, attention, will succeed where chicanery and deceit will fail. Seldom should a physician allow himself to be introduced to the patient in any other capacity than that of his profession; he should never do so if he is to have subsequent charge of the case. If a patient is to be removed from home, she should be told that she is to go to a sanitarium, providing she wants the information. If spoken to tactfully she consents at once.

There is a tendency on the part of physicians and family to pay too much attention to the acutely insane. Thus, I have seen cases in which the former have made four or five visits daily, while members of the family enter the sick-room every hour or two to determine the progress made. Such practice is silly to an extreme. It reminds me very much of the way some people cement pieces of bric-a-brac. They pull the fragments apart every few minutes to see if they are adhering. It must be remembered that recovery from insanity is a matter of weeks. Results cannot be expected within a few hours or days. Having decided upon what is deemed the proper course, the physician should have sufficient confidence in his practice to follow it out consistently.

Isolation from the family is the hardest of all things to enforce. The family will assert that the patient will die of loneliness. I have never seen such a result follow. Indeed, patients speedily become much more manageable when the family is excluded.

Occupation.—The acutely insane, as a rule, require no occupation, as they are for the most part confined to bed or the sick room. During convalescence, they as well as the chronic cases should be taught to follow some out-of-door pursuit which will not involve any mental strain. Circumstances will suggest some plan to the physician.

Character of Reading and Religious Observances.—Many of the insane present delusions relating to their condition in the future life. This has led some physicians to give them religious reading of a reassuring nature. My experience with this practice has not been satisfactory. If patients are given any religious attention, it should always be from a non-doctrinal standpoint. Indeed, I have always felt that patients are better off if nothing is done for them in this direction. Almost invariably, they will pick out such sentences and texts as argue for their everlasting misery in the future life. It is better, therefore, to avoid attention to religious matters.

Convalescence.—Many cases in asylums, sanitariums, etc., improve up to a certain point and then come to a standstill. When this stage has been reached, it is commonly good practice to return the patient to the normal environment, the result being a rapid restoration to mental health. It is not wise, as a rule, to rush the patient too quickly to business and other

cares. A month or two at a pleasure resort or light and easy traveling proves of great value in making recovery more settled.

Although the nurse is an important factor throughout the management of the case, it is oftentimes good practice to discharge her before the patient has recovered entirely. This course requires mature judgment. When the nurse is plainly in the way, and the patient shows a disposition to take hold of life's affairs, she can be dispensed with. When there has been a suicidal tendency, the patient should be kept under close surveillance until recovery is absolutely certain.

Medicinal Treatment.—The medicines of use in cases of mental disease are numerous; so many are they in fact that it is impossible to go over them and their indications and present a practical exposition of the subject. The subject of therapeutics of the insane is as vast as that of human ills in general. The indication for medicines are numerous. Hardly two cases can be said to be alike. So far then as homœopathic medication is concerned, the physician must rely upon a study of the materia medica. In prescribing, he must take close account of the associated visceral and diathetic conditions. The best practical short exposition of the medicinal treatment of insanity is that of Dewey,* which I take the liberty of quoting verbatim.

Belladonna.—The three great remedies of the Solanaceæ family have an important action on the mental state, and are possibly more often thought of and indicated in mental affections than other remedies. *Belladonna* is a remedy for delirious states, and must be given where there is wildness, restlessness, and a desire to cut or tear the clothing. The patient springs out of bed and strikes those around him. He appears frightened and sees objects when he closes his eyes. Speech and actions are hasty. It thus becomes a valuable remedy in **acute mania**, in fact, the highest form of mania, with great determination of blood to the head, hyperæsthesia of the senses, wild eyes and dilated pupils. Such patients may even bark like dogs and are most violent and pugnacious. *Tincture is characteristic*, great noisiness, the patient sings, screams and curses. Delusions of every conceivable variety may be present, in fact it suits well a buffoonish insanity with ridiculous actions.

Opium has also a fantastical insanity.

Hyoscyamus.—This is also a remedy in acute mania with extreme excitation of the sensorium and abnormal impulses. Talbot says that *Hyoscyamus* imparts the mental tone of its victim a brilliant and luminous red and stimulates him to sing in merriest and most vociferous tones the songs of Venus and Bacchus combined. The *Hyoscyamus* patient will perhaps imagine he is pursued by some demon or that some one is trying

* *Practical Homœopathic Therapeutics*, p. 218, et seq.

to take his life ; and he runs away from an imaginary foe. He is talkative and, like *Lachesis*, constantly jumping from one subject to another. The face is only slightly flushed, not the violent congestion of *Belladonna*. He may see ghosts and demons, but the mania of *Hyoscyamus* is rather an acute non-inflammatory mania.

Kali bromatum suits the acute mania of children where patient thinks he will be murdered or that people intend to strike him.

The *Hyoscyamus* patient acts silly and idiotic ; is lascivious and lewd ; throws the bed-clothes off and makes lewd and ridiculous gestures. Persists in stripping herself and uncovering the genitals. Nymphomania. It is a good remedy for the bad effects of extreme jealousy, fright, disappointed love, etc.

There is also a condition of depression found under *Hyoscyamus* with debility and prostration where questions are answered slowly and irrelevantly ; there is a quick pulse, accumulation of sordes on the teeth, snoring, breathing and dropping of the lower jaw. There is a great characteristic of the remedy usually present in these cases, namely, a constant picking at the bed-clothes or objects in the air. There is also the great and characteristic symptom of constant fear of being poisoned by the attendants, which *Rhus* also has.

Cantharis.—Here we have terrific outbursts of rage, the patient barks, and bites those around him. Such conditions are curable by *Cantharis* when reflex from sexual or bladder troubles.

Stramonium.—This remedy, like the two preceding members of the same family, has mania, and it is wild and most terrifying, filled with hallucinations ; he sees rats, mice, snakes and other animals approaching him and he retires in terror. He is also loquacious ; he becomes religious, prays, laughs, talks foolishly and tries to escape ; again he becomes Satanic, and has outbursts of violence with ideas of persecution. It corresponds well to many phases of erotic mania, nymphomania, and the mania of masturbation. The keynote of its symptomatology is *terror*. There is also a mania for light and company.

Veratrum album might properly be compared with *Stramonium*. Here the patient may be restless and wild looking, and be violent ; but with this remedy there is much physical prostration indicated by the cold surface of body, cold sweat, blue rings under eyes, etc. *Veratrum* may also be well indicated in melancholia ; the patient sits brooding all the time, distrusts every one. In religious melancholia, where the patient prays a great deal, is anxious about recovery, and despairs of salvation, it also has a curative action. Lilienthal says the *Veratrum* patient combines the wildest vagaries of the religious enthusiast, the amorous frenzies of the nymphomaniac, and the execrative passions of the infuriated demon, each struggling for the ascendancy, and causing him to writhe and struggle with his mental and physical agonies.

The following is a practical *resumé*: *Aconite*, fear. *Stramonium*, terror. *Belladonna*, violence. *Cantharides*, madness. To this also add *Veratrum*, frenzy.

Aurum metallicum.—One great remedy for melancholia where there is an actual disgust for life, a longing for death and a tendency to suicide; this tendency is only mental, the patient rarely, yet sometimes, attempting it. Dr. Talcott believes that *Arsenicum* oftener relieves suicidal tendencies than *Aurum*.

Arsenicum also relieves tendency to self-mutilation found in such patients. There is a feeling of worthlessness and despair; she thinks she has lost the affection of friends and that she is doomed to complete damnation. The memory is weak; anger or dispute makes the patient furious; there is a tendency to rush of blood to the head with these melancholic states.

Argentum nitricum.—Impulsive, always busy, errors in perception, dreads to pass a certain corner, makes mistakes as to distances.

Glonoïn.—Well-known streets seem strange.

Sulphur.—The typical *Sulphur* patient is irritable, a chronic, constitutional grumbler or else a "ragged philosopher," life having been a failure. Its usefulness in mental conditions is extensive and it corresponds closely to religious mania or melancholia; he becomes most anxious about his own salvation, but indifferent to that of others, an egotistic condition often seen in our asylums and sometimes out of them. These patients will dress themselves up in rags and imagine that they are clad in gorgeous attire; they will wear paper crowns with the majesty of a king, prince or potentate.

Sulphur also has a forgetfulness and patients will stop a long time to think how words are spelled.

Aconite being an acute *Sulphur* is most useful in mania and melancholia where there is a nervous excitement, fear of death, predicting the day thereof, and restlessness due to mental anxiety. It is particularly useful in sudden, violent and acute cases, which are worse in the evening. Convulsions of paresis may suggest *Aconite*.

Pulsatilla.—Religious melancholia, despair of salvation, constant prayer, folds the hands and sits like a statue; sleepless, restless, and changeable mania.

Anacardium orientale.—A most valuable remedy in mental disease, and its guiding characteristic is the well-known sensation of having two wills, one urging him on to do what the other forbids. It is a Dr. Jekyll and Mr. Hyde remedy. Another characteristic is the irritability of the patient, with an irresistible desire to swear and curse; this is not from a low moral or religious education, but from mental disease.

Anacardium has loss of memory, a condition for which the drug was used long before homœopathy established its scientific basis; again, the

patient will imagine that he hears voices afar off talking to him, or he has a fixed idea that he is possessed of a devil, that he is double, or a woman will fancy that her child is not her own.

Nitric acid.—With this remedy there is a disposition to swear, the patient often imagining that she has a devil within her, that her mind and body are separate, or that her child is not her own. This remedy has also an inclination to commit suicide by shooting.

Anacardium is a remedy much used in low melancholic conditions, and its clinical record is a brilliant one. It is an excellent palliative in the dementia of old age.

Cimicifuga.—In depressed states this is one of our best remedies. The patient is weak, depressed, "shrouded in a dark, heavy, mental atmosphere;" suspicious people and objects appear strange and unnatural, the brain feels too large. This sensation of a pall of gloom, or horrible sadness, settling over her is characteristic of the remedy. It is often expressed as a feeling as if something were about to happen, or as if they were going crazy. It thus becomes an important remedy in suicidal melancholia and especially in puerperal mania. Visions of rats and mice are sometimes seen, and the remedy has been successfully used in delirium tremens.

Calcarea carbonica.—The patient sees objects on closing the eyes which vanish when they are opened; like *Cimicifuga*, it has an apprehensive state of the mind, the patient fearing she will go crazy, and that people will observe her.

Alumina.—Low-spirited, apprehensive, fear of going crazy.

Iodine.—Fear of going crazy, shuns the doctor, has a dread of people, fears every occurrence will end seriously.

Calcarea phosphorica.—Dementia from masturbation in the young and senile dementia are often benefited by this remedy.

Delirium from drink or uterine troubles in rheumatic subjects will often suggest *Cimicifuga*.

Natrum muriaticum.—The patient requiring this remedy is melancholic, hypochondriacal, sad and hopeless about the future, easily angered, in fact, consolation aggravates. With this remedy there is a persistent recalling of past unpleasantnesses and grievances. It has awkwardness, like *Bovista*, *Lachesis*, *Æthusa*, *Apis*, *Ignatia*, and *Nux vomica*.

Pulsatilla.—Mild, gentle and tearful, seeks consolation; not introspective like *Ignatia*.

Natrum carbonicum.—Hypochondriacal, dependent on gastric disturbances. The patient for whom *Natrum muriaticum* is suitable is apt to have unjustifiable antipathy against certain people.

Sepia.—Another melancholic remedy is *Sepia*, which has dark forebodings about her disease, weak memory, sense of helplessness and great susceptibility to excitement, and still more to terror; despair; she dreads to

be alone, wants company, but has an aversion to her own friends and is indifferent to her household affairs.

Stannum.—Low-spirited in lung affections—an uncommon state ; tearful disposition ; fears he will go into decline.

Thuja.—Patient hurried ; trifles make him angry ; fixed idea of being brittle and will not permit any one to approach, or that he is under the influence of mesmerists or spiritualists. Soul and body separated. Music causes weeping and trembling of feet.

Ignatia.—Most cases of melancholia at some period of their treatment require *Ignatia* ; it suits women better, while *Arsenicum* and *Nux vomica* are more suitable to men. The *Ignatia* patient is melancholic, given to sighing, with a tendency to weep. She hides her grief, is introspective, changeable and silent. It is a remedy full of disappointments and jealousy, and is most suitable to complaints arising from fear or grief. The patient has a disposition to brood over her sorrows, has remorse about imaginary crimes, is intolerant to noise and tends to fixed ideas.

Phosphoric acid.—This remedy suits conditions of long-continued disquiet of the affections ; the chronic and long-lasting effects of grief rather than the acute forms. A great characteristic is indifference, homesickness ; is not irritable, but slow of comprehension ; shows no interest in anything, a don't-care condition. Another characteristic is failure of memory.

Picric acid is a rival of *Phosphoric acid* in acute dementia, with utter prostration, burning in spine, weakness of legs, pains in back and occiput. Desire to sit still without taking interest in surrounding things.

Nux vomica.—This remedy suits overworked, fidgety business men of sedentary habits ; they cannot bear to be opposed, are irritable and irascible, easily put out, quick to act ; those of a fitful temper and where there is a great disinclination to mental work.

In conditions of resistive melancholia where the patient resists everything done for her, with no interest in anything, offensive breath, etc., it is often productive of beneficial results. The most disagreeable of maniacs with "pure cussedness," difficult to manage, opposed to everything, is the *Nux vomica* patient. Hypochondriasis in the sedentary is met well by the remedy.

Lycopodium has a torpor of the mind ; the patient is melancholic and hypochondriacal, dependent mostly on digestive and hepatic troubles.

The *Nux* patient is oversensitive ; every harmless word offends and every little noise frightens. They are anxious and "beside themselves."

Cannabis indica.—This remedy produces marvelous kaleidoscopic visions and illusions as to time and space ; a minute seems thousands of years, and a thing a short distance off seems yards away. He imagines he is swelling and his body is becoming large, that he hears numberless bells ringing ; a multitude of images crowd the brain and he feels as if he were somebody else. Voices come from a great distance and seem to enchant him.

Lachesis.—The snake poisons all have poisoned minds. With *Lachesis* there is great loquacity, the patient jumping from one subject to another; jealous, fear of being poisoned and refuses both medicine and food. Has to think how words are spelled. Muttering delirium, with dropping of the lower jaw and illusions, such as imagining that he is under some superhuman control or that he is dead. Melancholia at change of life. Delusion that he is persecuted, worse after sleeping. Neurasthenia.

Platinum.—The proud, egotistical mental state of the remedy is too well known for comment. The patient has illusions, everything is inferior to her in body and mind, and she looks down on everybody with contempt. Objects look smaller or strange, there is difference, everything seems too narrow. There is a great dread of death which seems near. It is a useful remedy in hysterical mania, where things seem horrible, and all serious thoughts are displeasing.

Palladium.—Music excites, constantly getting slighted, is easily offended and scolds continually.

Women with tendency to nymphomania and excitement of genitalia indicate well *Platinum*.

Baptisia.—This remedy is seldom used in mental affections, its field being confined to typhoid conditions, where it is indicated by a wandering of the mind; he is restless and disturbed; he cannot sleep, and he thinks he is double and scattered about, and he must move to get his pieces together again. These are the mental characteristics of *Baptisia*, and together with the weakness and other symptoms of typhoid indicate in it that disease.

Chamomilla.—This remedy is of great use in diseases of the mind where there is over-sensitiveness and a snappish irritability. Children and adults also, that are especially sensitive to pain, snappish, short and cannot be civil, consequences of anger.

Staphisagria.—Troubles from anger, pride and envy.

Colocynth.—Colic and anger.

Bryonia.—Gastro-enteric symptoms from anger, apathetic, irritable, obstinate and passionate.

Arsenicum.—Useful for the depressed delirious, fear of death, fear of being alone, with strong suicidal tendencies. See ghosts and vermin. It relieves the tendency in the insane to the mutilation of the body, picking at the skin until sore, chewing finger-nails, etc. Exhaustive insanity and acute delirious mania with typhoid symptoms and rapid exhaustion. Restlessness, thirst, physical exhaustion and midnight aggravation.

Silicea.—With this remedy there is an erethism combined with the exhaustion.

Those interested in a fuller disquisition on remedies are referred to Lilienthal's *Therapeutics*, pp. 620-634; 688-690; 693-703.

Physiological medicines are useful in a limited number of cases only. For the most part, they are palliatives, relieving certain symptoms, exerting no curative influence on the course of the disease. Still, they are occasionally necessary. Their indications will be presented in the following sections dealing with some of the more commonly observed forms of insanity.

Idiocy; Imbecility.

Cases of idiocy must be studied to determine whether the mental deficiency is congenital or dependent upon some special localized lesion offering some hope from surgical intervention. Cases belonging to the latter group are rare. Their recognition depends upon a knowledge of the principles governing the pathological diagnosis and cerebral localization.

The congenital cases are usually hopeless. The most that we can do is to place the victim in a suitable school which has the talent and facilities necessary for their education. This course is expensive, and for those who have the money, pays. Wonders must not be expected, as only a limited knowledge can be acquired when the brain is deficient.

Anti-syphilitic treatment is disappointing in the cases dependent upon hereditary syphilis. Once in a while it does good.

Many of the apparently hopeless cases can be taught manual occupations. Some show an aptitude for music.

Special care must be observed lest these patients develop bad sexual habits. Especially should female imbeciles be kept from association with unprincipled men and male imbeciles. Carelessness in this point has led to pregnancy.

Moral Insanity.

These cases resist all curative treatment. The most that we can do is to protect them from themselves, and give protection to the public by confining them within institutions.

Acute Mania.

Acute mania may be treated successfully at home, providing the physician in charge is adapted by temperament to the management of such cases. At least two nurses are necessary, and the family must be excluded from the room. Nevertheless, the results will be more certain if the patient is isolated in a suitably conducted sanitarium or hospital. The symptoms to combat are especially the active restlessness, the furious delirium, and the malnutrition. The restlessness and the active delirium may be combated by the administration of Hyoscine hydrobromate in doses ranging from $\frac{1}{400}$ to $\frac{1}{100}$ every four hours. The best effects from this sedative are not always secured from the same dose. Some patients do better on the small and others on the large dose. Experiment can decide. For the sleeplessness, Sulphonal and Trional are the most satisfactory hypnotics. They

must be administered as directed on p. 810. When the above fail, I have occasionally had recourse to hypodermic injections of Hyoscine, gr. $\frac{1}{100}$, combined with Morphia sulph, gr. $\frac{1}{8}$ to gr. $\frac{1}{4}$. This prescription is always efficient; but it is not wise to administer it oftener than alternate evenings. Indeed, I might say that, if possible, it is better to get along without any sedative medication. Though seemingly impossible, it is astonishing how much can be accomplished by quiet surroundings and experienced nurses. Excellent sedative effects can be obtained in many instances by the warm bath prolonged for from twenty minutes to half an hour.

Physicians and nurses should watch these patients very carefully because of their violence. Twice, both times by young women, I have been subjected to violent physical attacks; once a wash basin was hurled across the room the minute my back was turned; and on the other occasion, I was the recipient of a stinging blow in the face while the patient was conversing quietly.

Many of these patients are full of sexual delusions; hence, for his own protection, the physician should always insist upon the presence of the nurse, lest the patient make her delusions a basis for slanderous attacks.

Unless the physical activity is exhausting to the patient, or is too violent for safety, it is better to let it be worked off rather than to put on restraint.

The food must be supplied with generous hand. If the patient refuses to partake thereof, there should be no hesitation concerning the use of the nasal tube.

Attention to the bowels is of the highest importance.

Melancholia.

Minor attacks of melancholia often make excellent recoveries under simple hygienic precautions, such as abstinence from work, light travel, or a short season at a pleasure resort.

Severe cases, however, demand isolation and close watching because of the danger of suicide.

The important points in their active treatment include attention to sleep, regular action of the bowels, rest, exercise in the open air, and occupation. The favorite old-school remedy is Opium in relatively small doses.

Paranoia.

Paranoia is an incurable disease. All of its victims should be viewed with distrust. While none of them can be regarded as safe, it is usually impossible to obtain the consent of the family to their confinement until they have committed some overt act, or have manifested dangerous delusions. The mental symptoms are not equally active at all times. It is remarkable how these patients can conceal their weakness over many years.

One of my patients graduated number two from one of the largest universities of the East, within a few years became famous in a particular line of research, and yet his peculiarities were excused by family and associates because of his pre-eminent success in scientific lines. Later, he became so dangerous that an attempt was made to place him in a sanitarium, when he attempted suicide. This was followed by a long term of treatment in an asylum. The great difficulty in handling these patients is due to the fact that no one will adjudge them insane sufficiently early to prevent disaster.

General Paralysis of the Insane.

(Paresis; parietic dementia.)

Were I to depend entirely upon my own experience with general paralysis of the insane, I would without hesitation make the central part of its etiology syphilis. This view is of importance because it has an important bearing on the prevention and treatment of the disease. Alienists I know attack this position, but I believe upon insufficient data. Here I may quote from personal experience to show the errors in their data. A patient admitted to a Philadelphia asylum is recorded as a non-syphilitic case, and yet to my knowledge he had an infection in 1876. A physician became parietic ten years ago; his wife had a paraplegia five years before, cured by Iodide of Potassium. She has had recurrences, all of which yield promptly to the anti-syphilitic medication. A patient of Dr. E. H. Van Deusen exhibited nervous symptoms, which I diagnosed as syphilitic. Subsequently her husband developed paresis. Now all three of these cases are down on asylum records as non-syphilitic cases. They are simply notable examples of the unreliability of records from this source, because patients are in such bad mental condition that they cannot or will not give proper information, and relatives know nothing about the venereal history of the patient. As subordinate factors producing the disease are heredity, occupation involving great wear and tear, exposure to extremes of heat and cold, traumatism, alcoholism and sexual excesses. All of these I believe to be but secondary factors, the primary one being syphilis.

Prophylactic treatment appears to be an anachronism, for we cannot institute measures to prevent paresis unless we have good reason to expect its supervention, and this can only be determined when actual initial symptoms have appeared. By that time the mischief is done. Of course, we can insist upon men leading good moral lives, avoiding syphilitic infection and steering clear of alcohol and excesses; but we are not justified in holding up before them the probabilities of paresis, nor should we restrain some of the world's best workers from following their occupations because paresis is a possible occurrence.

The stigmata of paresis are usually present a long time before symptoms which appeal to family and friends develop. They should be evident

to an observing family physician, and it is at this stage that much can be done in the way of treatment. Usually the existence of the disease is not suspected until the patient has committed some overt act, or has exhibited a startling change in his temperament or business habits.

The first question always is whether the patient shall be treated at home or in an institution. The answer depends upon the nature of his mental aberrations and facilities for his home care. As a rule, it may be said that institutional restraint is necessary, because the delusions of these patients are such as to lead them to enter all sorts of wild financial schemes, and to numerous personal and business extravagances. One of my patients astonished his wife by sending home no less than fifty neckties, which he had purchased in a department store. Another, who was supposed to be in perfect health, on one day purchased more horses, cattle and pigs than could be crowded into his barn-yard and barn; another spent thousands of dollars in one day purchasing expensive jewelry, which he presented to his male friends. Another, who had no fondness for the turf, sought to corner the race-horse market, and was penniless before he attained his object. If the family is unwilling to restrain a patient, who appears to be happy, they should at least protect him by taking all control of property from him. Even then they should think of the harm he may do others by contracting debts, giving orders to factories, etc. Some patients are dangerous to themselves and others. In one of my cases, the husband exhibited high mental irritability for some months. One day, without any warning, he nearly brained his wife with an axe. Another, who was liberated from the asylum by his brother's request, started on a search for the physicians who signed his commitment papers, having previously provided himself with a pistol. He was finally turned from his object, and then secured a good position as salesman in a department store. Shortly afterwards he committed suicide. Mention of these cases may seem out of place in a therapeutic text-book; but they are a few illustrations of a very common class of cases. Those who have not met with them cannot credit them and do not appreciate their danger to their families and to society. *Paretic patients should be confined and treated in an institution or be placed under the care of experienced attendants, who will be with them always.*

If the patient is to be treated at home, it must be understood that it is only with the proviso he must be committed as soon as there is the slightest danger of the commission of an overt act or a disposition to damage the interests of himself and his family. The prognosis of the disease is highly unfavorable, but much can be done to lengthen its course, and, in some instances, stop its progress.

As soon as the case is diagnosed as one of paresis, it is important that the patient be taken away from business, if his position is such as to make

it possible for the grandiose delusions of his disease to jeopardize the property of himself and others. If, on the other hand, his work is light, and his occupation is perfectly safe, it may prove to be a wise plan to keep him at it, rather than to let him become morbid from a life of idleness.

The former life of the patient must be carefully studied, for in it we are almost certain to find the causes which have led to his illness. In addition to this; we must endeavor to obtain a good idea of his environment, for his social relations may be such as to make improvement impossible unless they are changed. It may prove necessary to have a serious talk with the patient respecting his habits, that he may be fully impressed with the importance of changing them. There are some authorities who express their firm belief in the efficacy of this course in putting a stop to the onward progress of the disease, when the case is taken in hand early. Needless to say, alcoholic indulgence must be eliminated entirely. Excesses in tobacco must be forbidden. Occasional smoking as tending to make a life of idleness more acceptable may be permitted. Very great moderation in sexual indulgence, if not a life of continence, must be inculcated.

Special attention must be paid to the patient's rest. Above all things he should retire early. If he passes sleepless nights, the advice to be given in the section on Insomnia must be followed. While ordinarily rest is meant to convey the idea of change of occupation and surroundings, it must not be interpreted to mean travel. There is no advice that can be worse than that which results in trip to Europe or across the Continent. Traveling bring with it many annoyances, and the patient cannot be surrounded by home comforts. Many times have I seen travel bring disastrous results in its wake. While thus going about from place to place, the supervision of the physician is absolutely impossible.

The diet must be selected according to existing conditions. In the majority of cases, and under ordinary circumstances, it is sufficient to order a well-selected mixed diet, the only restriction being that the patient shall not exceed his capacity or needs. During the periods of excitement, it is important that the food should be light and easily digestible. Paretic patients are not infrequently voracious; hence, the importance of watching their diet. Some physicians believe that meats should be greatly restricted. Of the value of this opinion I have serious doubts, as every effort should be made to secure the highest standard of nutrition. Hence, my advice is to give a generous mixed diet.

In the later stages of the disease, when the patient's mind is greatly deteriorated and deglutition is carelessly performed or difficult, special attention must be paid to the act of feeding, lest particles of food be permitted to escape into the respiratory tract and set up a deglutition pneumonia. Finally, there comes a stage in the course of the majority of cases

when the patient is bed-ridden, and all food administered must be of a liquid character. Owing to the pronounced asthenia at this stage, alcohol may be permitted in moderation.

Should there be any disturbance of any of the bodily functions this must be attended to. The bowels must be kept regular, either by diet or medication. The bladder must be carefully watched, for rupture following great distention has taken place in a few cases.

Massage will prove of value when the patient is leading a sedentary life.

Hydriatric methods should be practiced according to the indications present. The procedures found most frequently useful are douches, the warm bath, and the cold sponge bath in the morning, and the hot pack.

Certain symptoms oftentimes demand special measures. Of the insomnia, I have already spoken. This, more than any other, demands serious consideration; for if the patient does not sleep well, we can feel assured that his ailment will not progress favorably. Asylum superintendents prefer Paraldehyd in doses of thirty minims to any other hypnotic in this disease.

The **epileptiform seizures** require during their attack the institution of simple measures to keep the patient from hurting himself, as in idiopathic epilepsy. If they persist for an undue length of time, the patient should receive a rectal enema of twenty grains of Potassium bromide, and ten grains of Chloral dissolved in four ounces of water. To prevent recurrence of the convulsions, we may use the Strontium bromide as recommended in the article on the treatment of epilepsy. Still, we must not expect brilliant results in the way of warding off the convulsive seizure; the most that we can expect is a moderate diminution in their frequency.

Apoplectiform seizures are to be treated as in the acute stage of cerebral hæmorrhage, *i. e.*, by elevation of the head and shoulders, and the application of the ice-bag to the head. These measures may be conjoined with a hot mustard foot-bath.

Mental excitement or mania demands, in the first place, tact on the part of attendants and family. If possible, the patient should be kept at rest in bed with the first sign of this symptom. Remedies which are likely to prove of value are *Belladonna*, *Hyoscyamus*, *Stramonium*, *Agaricus*, *Cannabis indica*, and *Veratrum viride*. Should these fail, we may resort to the sedative remedies recommended in the section on the hypnotics.

During the terminal stage of paresis, bed-sores are not uncommon, we believe, in the majority of cases as the result of inattention on the part of nurses and attendants. Of course, there are some cases in which this complication is almost inevitable. The best means for combating bed-sores are perfect cleanliness, prevention of pressure too long continued on any one place, and the water-bed. When the bed-sore develops it should be

treated as any surgical lesion of like character, *i.e.*, by cleanliness and antiseptic dressings. I have always been disinclined to accept the view that bed-sores were frequently if at all a purely trophic phenomenon. It is certainly for the patient's interest that the physician insist that they are dependent upon dirt and pressure.

Chase * quotes Hughes concerning a novel plan of treatment, as follows: "He orders the sore washed with warm water and castile soap, and then thoroughly rinsed. A liquid preparation of beef, Bovinine, is poured over the surface of the ulcer, and the surface is saturated by using pledgets of lint. The ulcer is carefully covered, as in a surgical dressing. Granulations appear gradually after this treatment, followed by an epithelial covering. This treatment is effective, for the tissue thus formed is not less resistant than the neighboring skin."

Among the terminal symptoms, nothing is more troublesome than the urinary incontinence of retention. Incontinence demands careful attention to detail as to cleanliness. Retention necessitates the use of the catheter, which should always be used with painstaking attention to antiseptic technique, as in major surgical operations.

As to medicines, I am a firm believer in the value of Potassium iodide in the early stage of the disease. This confidence is born of experience. That it fails to cure in probably all instances is admitted; but it does ameliorate the condition quite materially, and makes the patient's subsequent existence more bearable. In some few instances it stays the course of the disease.

As to other remedies, there is very little to say. Talcott,† notwithstanding his faith in the medicinal management of insanities in general, expresses himself as hopeless in the face of general paralysis of the insane. The most that we can do is to give symptomatic treatment, and the remedies most likely to prove of value are *Aurum mur.*, *Platina*, *Argentum nitricum*, *Picric acid*, *Secale*, *Arsenicum*, *Belladonna*, *Hyoscyamus*, and *Stramonium*.

The surgical treatment of general paralytics has attracted considerable attention, owing to reports of a few cases much improved after a simple trephining and opening of the dura, the idea being to reduce intracranial tension by the operation. The general opinion of the best alienists is decidedly antagonistic to surgical interference, as being entirely useless.

* *General Paresis*, p. 280.

† *Mental Diseases and their Modern Treatment*.

CHAPTER XXVI.

DISEASES OF THE SKIN.

By EDWARD M. GRAMM, M.D., Professor of Dermatology in the Hahnemann Medical College of Philadelphia; and RALPH DEMING, M.D., Clinical Instructor in Dermatology in the Hahnemann Medical College of Philadelphia.

WHILE the prime object of the following pages is to indicate the treatment of diseases of the skin, it seems advisable to preface the measures to be employed in the different diseases by a short definition of what is understood by each name ; for, in skin diseases, more than in any others, the nomenclature has been made obscure by the various authorities having called identical ones by different names. It is probable that, at times, the definition will not include all of the phases presented in certain of their stages ; but it is hoped that the morbid appearances will be presented sufficiently clearly so that no mistake will be made as to the disease under consideration.

The principles underlying the application of remedial measures in dermatological practice do not differ in any way from those used in the treatment of any other aberration from the normal in other organs. The human system is an entity that cannot be considered in any other light than as being sick, no matter where pathological phenomena are discernible. A few of the diseases produced by micro-organisms upon or within the skin are exceptions to this rule ; but this fact will be stated in the appropriate places. An accurate diagnosis is necessary before deciding when it is possible and necessary not to administer remedies for the upbuilding of the general economy. Many times the indications for internal remedies are to be sought elsewhere than upon the skin, for the various intoxications and diseases of other organs have contemporaneous manifestations on the surface and must be dealt with in such a manner that the individual presenting them will be healed of the general disorder before the skin lesions are prevented from recurring.

From the fact that the provings of our remedies mostly fail to state the stage of a given affection in which certain lesions appeared, the local conditions are often unsafe guides on which to base a prescription. A critical examination directed to every organ in the body, to the causes producing the disease, and to the influence of heredity in predisposing to a non-resistant condition of the skin must be instituted in every case. However, the influence of heredity is given an undue prominence by

many physicians, and lack of proper care of the cutaneous envelope is given too little consideration by others. Proper care of the skin will prevent the development of most of the diseases where the exciting cause needs to be of external origin. The deleterious influence of wind and weather and of the irritating substances necessarily brought in contact with the skin in certain occupations is reduced to a minimum in those who intelligently care for themselves. Indiscretions in diet, too, are much less harmful under similar circumstances; while micro-organisms find little opportunity to effect a lodgment on or within a skin the care of which is undertaken on proper lines.

In the following pages the indications for remedies to be administered homœopathically will not be given as completely as the author's wish. Those which will be recommended must be selected according to all the symptoms presented by a patient, and as the lesions upon the skin constitute only a small part of the departure from the normal which needs to be remedied before the individual can be made a healthy one. For many of the indications given our thanks are due to the late Dr. Dearborn, whose work stands alone as presenting a practical analysis of the materia medica of the skin.

HYPERÆMIÆ—CONGESTIONS.*

Erythema.

The term erythema is expressive of hyperæmia or congestion of the skin due to the influence of causes that act from without the body, many of them for but a short time; or to causes that act from within the body, such as intoxications or general diseases. The former is the idiopathic and the latter the symptomatic variety. Removal of the cause in idiopathic erythema frequently is sufficient to combat the condition; while the treatment of symptomatic erythema is that of the disease by which it is produced.

Erythema simplex is the mildest form of acute congestion with which we meet, and is often produced by the rubbing of the clothing. Rectifying localized pressure or substituting another material for the one worn, and which is the offending cause, meets the requirements in this direction. Bland dusting powders, applied four or five times a day, are usually all-sufficient. Those which can be used singly or in combination are powdered talc., rice flour, powdered orris root, finely pulverized zinc oxide, prepared chalk and kaolin. It is, however, essential that whatever dusting powder is selected must be in the finest possible state of subdivision and should contain no gritty particles.

Erythema ab igne is the variety produced by exposure to the sun's rays or to radiant heat in general, such as that to which cooks and workers

* By Dr. Gramm.

near the intense heat of furnaces, etc., are exposed. Here, soothing lotions, such as the Calamin lotion in full strength, or, diluted according to the requirements of the individual case, an aqueous solution of Boric acid or Carron oil is required. The Calamin lotion in full strength, to which reference will be made from time to time in these pages, is—powdered Calamin, forty grains; Zinc oxide, thirty grains; Glycerin, fifteen minims; Rose water, one fluid ounce.

Erythema pernio, or chilblain, hardly requires definition. All authorities agree that prophylactic measures occupy an important rôle in this affection. The general health of the patient must be improved and, in particular, the circulation of the hands and feet stimulated by the various exercises that are known to accomplish this result. Warm and large shoes and warm gloves are necessary. The hands are to be washed in hot water and thoroughly dried, and then covered with warm gloves.

Calamin lotion, alone or with 2 or 3 per cent. of Carbolic acid to relieve the itching, is to be used early in the affection, or compresses wet with a solution of hyposulphite of soda, a drachm to the ounce of water, may be applied at night. Positive galvanization offers an excellent means by which the localized inflammation can be allayed. When the more severe symptoms have been subdued, painting with tincture of Iodine is advocated; tincture of Benzoin, too, is helpful. Tincture of Belladonna, applied locally, has brought relief to some cases. Crocker recommends a 10 per cent. ointment of Ichthyol or Menthol.

Erythema scarlatiniforme is a rare disease, which is characterized by universal erythema that appears suddenly and reaches its full development in a few hours or a day. It is followed by free desquamation even while the process is acute, and which may continue for a week or ten days. The systemic symptoms of scarlatina are lacking.

Ordinarily the patients are very susceptible to changes of temperature, and, on that account, they are preferably confined to bed for a day or two. The dusting powders listed under erythema simplex can be employed to advantage when the skin does not feel tense and stiff. In the latter event one of the oils or fats will cause the skin to feel pliable again. Olive oil, Sweet Almond oil, or Lanolin (mixed with Olive oil or cold cream to make it more easy to spread thinly over the surface), can be used. Alkaline baths give great comfort to some patients suffering from the trouble.

Remedies are to be selected according to systemic indications, and will usually be found to be one of the following: *Aconite*, *Agaricus*, *Ailanthus*, *Ammonium carb.*, *Apis*, *Arsenicum*, *Belladonna*, *Cantharis*, *Chamomilla*, *Chininum sulph.*, *Croton tiglium*, *Graphites*, *Hepar*, *Hyoscyamus*, *Juglans cinerea*, *Lachesis*, *Lycopodium*, *Manganum*, *Mercurius*, *Opium*, *Rhus tox.*, *Sepia*, *Stramonium*, *Sulphur*, *Terebinthina*.

Arnica.—Erythema from traumatism or exposure to heat; attended by bruised or sore sensations; ecchymoses; parts dark red or livid.

Belladonna.—Erythema scarlatiniforme; parts of a bright-red color; local heat well-defined; sensitiveness; itching and smarting sensations.

Ammonium carb.—Erythema scarlatiniforme due to the ingestion of putrefactive substances; heat and itching of affected skin; desquamation.

Chininum sulphuricum.—Erythema scarlatiniforme, the eruption manifesting itself more particularly over head, neck and thorax; itching and pricking sensations very severe; desquamation of skin a very prominent feature.

Hyoscyamus.—Erythema scarlatiniforme in patients presenting a high grade of neurotic manifestations, or in alcoholic subjects with muscular twitchings.

Rhus tox.—Erythema in rheumatic subjects; itching, burning, and tingling are severe.

Erythema Intertrigo.

This is a hyperæmic disorder occurring on parts where opposing surfaces of the skin come in contact; it is characterized by redness, to which may be added an abraded surface and maceration of the epidermis. (Stelwagon.)

In dealing with this affection, either in infants or in adults, it is of prime importance to keep the opposing surfaces separated by means of an absorbent fabric, for the moisture which usually develops has a tendency to aggravate the condition. Absorbent lint stands first in value for this purpose and can be kept in position by a narrow bandage passing over the middle of each piece in the depths of the folds. Unna's suggestion of a flat bag of cheese-cloth filled with a dusting powder often proves of value. Whatever is used must be changed often.

Frequent washings with soap and water or cleansing by means of the application of Olive oil and its subsequent removal by gentle wiping are serviceable. Thorough drying by patting the surface with a soft towel or other appliance must follow each washing. The use of Olive oil in localities prone to become hyperæmic is often prophylactic, and is to be thought of particularly in infants suffering from diarrhœa; but the oil must not be allowed to remain *in situ* in quantity. It is to be applied in moderate amount and the excess gently removed, leaving the skin only slightly oily.

Following the cleansing a bland dusting powder must be used in mild cases. Powdered Starch, Boric acid, Zinc oxide, Talcum and prepared chalk, either singly or in combination, are probably the best for the purpose. Starch, when used alone, has the disadvantage of caking, which renders its removal difficult. Finely-powdered willow charcoal, in small quantity, often proves a valuable addition to the dusting powders. Bismuth subgallate, from twenty grains to a drachm to the ounce, can be used where a mild astringent is required.

Mild lotions are of value in certain cases. Of these, a saturated watery solution of Boric acid, Lotio nigra in full strength, or diluted with Lime water and the Calamin lotion in full strength or diluted, are most frequently called for.

Where burning or itching need to be combated, the addition of two to five grains of Salicylic acid, or about twenty drops of Spirits of Camphor to the ounce of powder, or from one-half to five grains of Resorcin, or two to five grains of Salicylic acid (dissolved by the aid of Borax) to the ounce of lotion will prove valuable.

Ointments should be tabooed in most cases, as they often aggravate the condition. The use of Olive oil, as indicated above, answers all the purposes which might seem to call for a greasy substance.

The remedies which should be considered are *Calcareæ carb.*, *Carbo veg.*, *Chamomilla*, *Graphites*, *Hepar*, *Lycopodium*, *Mercurius sol.*, *Petroleum*, *Psorinum*, *Pulsatilla*, *Sepia*, *Sulphur*.

Graphites.—This is our leading remedy for intertrigo. The general cutaneous surface is abnormally dry. Suppuration readily takes place in small lesions. The cutaneous symptoms of Graphites are, in fact, the characteristic symptoms of erythema intertrigo. The associated sensations are varied and include burning, stinging, smarting, and rawness. The discharge is glutinous. Aggravation from warmth; relief from washing the affected parts.

Hepar likewise has the suppurative tendency well-marked. Marked sensitiveness to cold and touch; relief from warmth; pains are of a sticking character; itching is not prominent.

Calcareæ carbonica is indicated entirely on its constitutional features.

Lycopodium.—The intertrigo amounts only to a redness of the folds of the skin. The morbid sensations are not severe, and include burning, sticking or soreness. Aggravation from warmth and in the late afternoon.

Chamomilla is indicated by temperamental and gastro-enteric symptoms; *Psorinum*, *Sulphur*, and *Petroleum*, by constitutional peculiarities of the patient and his disease.

EXUDATIONES—INFLAMMATIONS.*

Erythema Multiforme.

This disease is characterized by the development of reddish or purplish-red macules, papules or tubercles with an occasional vesicle. The lesions often manifest a tendency to partially or completely heal at the centre, and are usually accompanied by very slight subjective sensations. At times it resembles urticaria in appearance.

Subjective sensations are ordinarily so mild that local applications are

* By Dr. Gramm.

not demanded in the majority of cases. Bland dusting powders, however, are always grateful to an erythematous skin and may be prescribed here. When it is desired to allay the slight burning or tension that is felt at times, a watery solution of Boric acid or Calamin lotion may be employed, particularly if 1 to 3 per cent. of Carbolic acid or five to twenty drops of Liquor carbonis detergens to the fluid ounce be added to the lotion which is used.

Internal treatment should be directed to allaying gastro-intestinal irritation if that be found to exist. Clearing out the digestive tract might be required if the patient comes under observation early enough, so that it can be demonstrated that indigestible or otherwise harmful substances are contained in it. As symptoms simulating rheumatism are sometimes a feature of the disease, the remedies curative in those conditions are to be studied. Endocarditis at times accompanies the eruption, which would lead us in the direction of the medicines useful in heart affections. Gout must be combated by appropriate means. If, however, none of the foregoing accompaniments are demonstrable, we must select the curative remedy from such medicines as *Aconite*, *Apis*, *Belladonna*, *Chininum sulph.*, *Comocladia*, *Dulcamara*, *Mercurius sol.*, *Rhus radicans*, *Rhus ctenata*, *Rhus tox.*, *Salicylic acid*, *Sulphur*, *Sulphuric acid*, *Urtica urens*.

Antipyrin.—Eruption located on back, chest, and abdomen; sensations of coldness internally; perspiration profuse; cases arising from gastro-intestinal disturbances.

Aconite.—Cases originating in emotional causes; associated with prickling or stinging sensations; angioneurotic element prominent; plethoric subjects.

Apis mellifica.—Swelling a prominent feature; redness is of a pale rose hue; pains are stinging, smarting, and burning.

Rhus tox..—Rheumatic subjects; tendency to vesiculation; general restlessness; tingling, itching sensations; aggravation from damp weather.

Salicylic acid.—Rheumatic subjects; eruptions on face or upper extremities, associated with sweating; vertigo; tinnitus.

Chininum sulphuricum.—Flat, lumpy, itching papules in patches on back of hands; vivid redness with swelling and itching on face and limbs; lesions sensitive to touch, worse at night, from exercise; especially when lesions tend to vesiculate or become purpuric (Dearborn).

Erythema Nodosum.

This disease is characterized by tense, glistening, somewhat tender, pinkish, nodular elevations, mainly on the extremities. They gradually soften and are absorbed; and, while undergoing involution, they take on the various colorations of a bruise. They appear oftenest during the changeable weather of spring and autumn. (Crocker denies that this is a fact.)

Rest in the horizontal posture should be enjoined upon patients, as involution of the nodes proceeds more rapidly when the return circulation is aided by the recumbent position. When the patient is compelled to remain on his feet moderately tight bandaging should be employed. Where relief from pain is demanded a wet-pack saturated with a warm lotion made of solution of the subacetate of lead and tincture of Opium, five to fifteen minims of each to the ounce of water or distilled extract of witch hazel is to be used. Hyposulphite of soda can also be used in the strength of one drachm to the ounce of water.

Internal remedies applicable to the salient features of the case are to be used. The articular pains of the fever with its concomitants will often indicate the class of remedies to be considered in making the prescription. Those which have proved valuable are *Ammonium mur.*, *Apis*, *Belladonna*, *Juglans cinerea*, *Lachesis*, *Rhus tox.*, *Salicylic acid*, *Sulphur*, *Sulphuric acid*.

Belladonna.—Indicated in any stage of the affection by the bright hue of the redness.

Ammonium muriaticum.—The lesions are about the wrists and are of a reddish-brown color and sensitive; burning, stinging, crawling sensations; persons with fat bodies and thin extremities. Anæmic and rheumatic individuals.

Apis mellifica.—"Burning nodosities around the articulation with fever. This remedy is more particularly indicated when erythematous patches are extremely red, very red and with extensive burning. Tendency to syncope is another indication for this remedy" (Jousset).

Antimonium crudum.—Jousset recommends this remedy for the same symptoms as those calling for *Apis mellifica*, with the addition of coated tongue, nausea, vomiting and diarrhœa.

Chininum sulphuricum.—"When the patches are less prominent, when the arthritic complications are more marked, and especially when the morbid process is intermittent in character" (Jousset).

Urticaria.

This disease is characterized by the sudden development of pinkish or whitish, tense-looking, solid elevations (wheals) of different size and configuration. They remain visible for a short time and then suddenly disappear without leaving behind any trace of their existence. Burning, tingling, and itching of variable, usually great, severity accompany them.

A severe attack of this disease is maddening to the patient and tries the skill of the physician to the utmost. It must be borne in mind that the lesions are the result of a toxæmia, and that its dermal manifestations are, as it were, an end-process, thus explaining our apparent impotency in relieving the subjective sensations in a small proportion of cases. If the

cause has recently become operative, as the ingestion of shell fish, indigestible substances, etc., emetics or cathartics may be the proper procedures to employ. If, however, the case is chronic through repeated outbreaks of wheals a careful search for the reason of their development must be made, and, in many persons, the causes will be hard to demonstrate. All urticarias are not caused by dietetic errors. Medicinal substances often produce it; among these may be mentioned quinine, cubebs, copaiba, salicylic acid, morphia, turpentine, chloral, etc. Worms in children, genito-urinary diseases, rheumatism, malaria, asthma, and the eruptive fevers will often be associated with an attack of urticaria. The gouty diathesis, fear and anger, in fact, mental emotions in general, will produce urticaria. These various causative factors are mentioned in order that the proper treatment for those affections will not necessarily be changed when urticarial wheals show themselves during the course of one of them.

Antipruritic lotions and ointments are often needed to control the itching and burning. The addition of 1 or 2 per cent. of Carbolic acid or Menthol to any soothing ointment often is sufficient to do the work. The addition of three drachms of Carbolic acid to the pint of lotion or Menthol, ten to fifteen grains to the ounce, where lotions seem advisable, is helpful. Alkaline baths help other cases—one quarter of a pound of washing soda to twenty gallons of water makes an admirable one.

It is often a mistake to put patients on a milk diet, for all people cannot tolerate it, as toxic products of digestion result from its use in them.

Too cold or too hot liquids should not be taken during the persistence of the wheals.

Some of the remedies useful in this affection are *Aconite*, *Anacardium*, *Antimonium crud.*, *Antipyrin*, *Apis*, *Arsenicum*, *Benzoic acid*, *Bovista*, *Bryonia*, *Caladium*, *Calcaria carb.*, *Chininum sulph.*, *Chloral*, *Colchicum*, *Copaiba*, *Dulcamara*, *Hepar*, *Creosote*, *Lachesis*, *Opium*, *Pulsatilla*, *Rumex crisp.*, *Salicylic acid*, *Sulphur*, *Terebinthina*, *Urtica urens*, *Veratrum album*.

Apis mellifica.—Hives occurring usually on the lower extremities below the knees, sometimes on the arms, but rare on other parts of the body; pains of a burning, smarting, or stinging character; dyspnœa with the urticaria; chronic cases.

Camphor is recommended by Jousset as follows: "Should there be tendency to syncope, when coldness, weak pulse and anxiety do not subside under *Apis*, or should all these symptoms manifest themselves at the outset with a great intensity, Camphor is given in the tincture, one drop on a lump of sugar every half-hour."

Urtica urens.—When burning and itching of the skin are intense; fine stinging points; pale rash requiring constant rubbing; œdema of chest, face and limbs without inflammation; large blotches without inflammation.

Arsenicum album.—Urticaria from eating shellfish. Chronic cases;

wheals are large with nocturnal aggravation ; burning, itching and restlessness ; urticaria disappears, and such symptoms as those of croup appear.

Astacus fluviatus.—Urticaria with gastro-intestinal and hepatic disturbances. Fullness and pressure in the epigastrium ; inward chilliness with sensitiveness to the air ; hepatic region painful.

Chininum sulphuricum in cases associated with intermitting fever, or dependent upon malaria.

Anacardium.—Urticaria tuberosa, with itching, burning, and swelling ; intense redness of the skin, with eruption of little blisters and unbearable itching ; aggravation in the evenings and when in bed.

Antimonium crudum.—Urticaria with gastro-intestinal catarrh ; aggravations by heat and acids ; tongue coated thick white.

Antipyrin produces a very characteristic nettlerash, and this has led Jousset to use the drug somewhat empirically. Special indications include intense itching on thighs extending up to the abdomen, tears herself with her nails ; feet icy cold.

. Prurigo.

Is characterized by the development of urticarial lesions during the first year of life. Later, discrete papules form which at first are the color of the normal skin, and can be felt better than they can be seen. Later, they become pale or dark-red and covered with blood crusts, for the itching which accompanies this disease is intolerable. Extensor surfaces of the limbs are most affected. Flexures of joints, the scalp, neck, palms and soles do not show any evidences of the disease. Later, the skin becomes thick and hard, with consequent deepening of the normal furrows. Pigmentation also develops. Desquamation is present in the form of fine, mealy scales. Secondary complications mask most cases ; they are eczema, urticarial wheals, ecthymatous lesions and glandular enlargements, particularly in the groins. Ordinarily, the general health is not markedly affected.

Treatment must be directed to a general upbuilding of the patient, it being claimed that much can be accomplished by prolonged rest in bed and a liberal diet alone. The complications are to be treated according to the principles governing the cure of those conditions when they exist by themselves.

The itching is the main feature to be combated. This can be much relieved by prolonged alkaline or other baths, followed by inunctions with some of the fats. Two to four ounces of Bicarbonate of Sodium to the ordinary bath of about thirty gallons of water is to be used in the average case. Two to four ounces of Potassium sulphide or two to four ounces of Vlemminckx's solution (made by boiling slaked lime, two ounces, and Sulphur, four ounces, in twenty ounces of water) can be used where dry papules exist alone. The baths should be taken every day at a temperature of

90° F., and should last about half an hour and the skin then thoroughly rubbed with an emollient, such as vaselin, or lanolin mixed with Olive oil, or cocoanut oil, to make it of a consistence so that it can readily be spread over the surface. Kaposi recommends a 5 per cent. Beta-naphthol ointment for adults and one of 1 per cent. for children.

Some of the remedies which have been found indicated are *Alumina*, *Antimonium crud.*, *Arsenicum iodat.*, *Calcareo phos.*, *Graphites*, *Ledum*, *Manganum*, *Rumex*, *Silica*, *Zincum*.

Alumina.—Itching intense, with aggravation on becoming heated; dryness of whole skin; constipation.

Arsenicum iod..—Itching, especially on the arms and hands; skin harsh and dry; thin, anæmic subjects; aggravation from water.

Manganum.—Anæmic subjects; delayed menstruation; aggravation at or near menstrual periods.

Rumex crispus.—Eruption invades legs chiefly; itching is aggravated by cold, and relieved by warmth, which is contrary to the usual case.

Sulphur.—Burning, itching, pricking sensations; aggravation from warmth; amelioration from motion; thin, emaciated subjects.

Eczema.

This is often an acute but mostly a chronic disease of the skin, characterized by the development of erythema, papules, vesicles, pustules, scales, crusts, or oozing patches or by a combination of these lesions, accompanied by burning and itching, usually of great severity. A tendency to thickening of the affected region also exists. It is essentially a catarrhal inflammation of the rete mucosum, and is the commonest skin disease that presents itself for treatment.

A close observation of many patients suffering from eczema has convinced me that by far the most important factor in its production is improper care of the skin extending over long periods. It is neither contagious nor hereditary, yet it occurs in the youngest infants and at all ages up to the oldest. Those in poor circumstances and those living in affluence are attacked by it. A critical investigation into the habits of life as to the care of the skin of those suffering from eczema will in practically all of the cases demonstrate some lapse in the intelligent treatment of the cutaneous surface. This view of the causation of most cases of eczema does not preclude the possibility that simultaneously with the development of an attack of eczema there may exist some underlying dyscrasia, disease, or lack of resisting power of the skin, the latter even being possible in a number of succeeding generations. Gout, rheumatism, scrofula, auto-intoxication, gastro-intestinal disturbances, diseases of the generative organs, may exist for many years without cutaneous disorders manifesting themselves, and, while they need to be taken into account in the treatment when once the

eczematous process has become established, yet they are given undue prominence by most authorities when discoursing on this disease.

Every patient coming under the care of the physician for eczema needs to be dealt with as an entity apart from his skin disease. In other words, the patient with eczema must be looked upon as needing to be made well in every respect and not cured of skin lesions alone. Every organ in the body needs to be interrogated for signs of disorder or deterioration, all of the excretions need to be examined, every habit, everything connected with the occupation of an individual, the nature of the diet in which one habitually indulges; in fact, all that has a bearing on the ordinary life of a person must receive the closest scrutiny. The management of a case of eczema is, therefore, not so much a problem in dermatology as it is one of internal medicine. It is only when the disease is approached from this standpoint that the physician can feel that he is handling a given case scientifically, and that the patient should feel that he is receiving that intelligent care which must eventuate in the conquering of the disease for the balance of his life. Superficial prescribing invariably means prolongation of suffering, and making an attack take on a chronic form instead of progressing to a complete cure.

By reason of the fact that subjective symptoms are usually violent, and that they are many times much more severe than the area affected would seem to warrant, and also by reason of the fact that the burden thrown on the nervous system by the loss of rest and the tension under which a patient exists while suffering the torments inflicted by the itching, etc., it becomes necessary to use local sedatives that will allow metabolism to approach a normal condition, and permit reparative efforts by the system to produce their best possible effects. It must be borne in mind that subjective symptoms (itching, burning, pricking, stinging, and all the rest), cannot be completely annihilated while the disease which produces them continues to be active. They are the evidences of the existence of the eczema, and will persist until the inflammatory process begins to wane, when they, too, will gradually lessen and finally disappear. The patient should be made conversant with this fact in order that he will not expect the impossible, but will lend his co-operation in the battle for subduing this harassing disorder.

All drugs that are to be applied for the relief of subjective sensations should be used in very mild strength at first in order to test the quantity that is sufficient to accomplish the purpose and to find out in what strength they can be tolerated. They may be used in a lotion or in oil, such as Olive oil or Sweet Almond oil, or they may be incorporated in a thin ointment base, such as the Unguentum aquæ rosæ or Petrolatum. Watery solutions are often made more efficacious by adding a small quantity of glycerin or alcohol to them; but it should be an invariable rule to make

prescriptions for local use as simple as possible, to contain as few ingredients as will accomplish the purpose for which they are intended. Again, they may be mixed with other drugs that are curative rather than merely sedative.

The substances that have been proven to be antipruritic, and of which the maximum quantity to be used is here given, are Borax, one drachm to the pint; Carbonate of Potash, four drachms to the pint; Carbolic acid, two drachms to the pint; diluted Hydrocyanic acid, two drachms to the pint; Liquor carbonis detergens, four drachms to the pint; Liquor plumbi subacetatis, thirty drops to the ounce; Menthol, ten grains to the ounce; Salicylic acid, ten grains to the ounce; Sodium bicarbonate, three drachms to the pint.

The more acute the eczematous process is, the milder the local remedies should be at the commencement of their use. They can be gradually increased in strength until it is ascertained just how much of the medicament is required to start the disease towards recovery. Another cardinal principle to govern the compounding of all local applications is to make them as mild as possible when large areas are to be treated; circumscribed areas will tolerate a medicament in a greater strength.

One of the first requisites in treating an attack of eczema is to keep the affected locality free from any debris that is the result of the disease or of the disease plus the treatment. Scabs and crusts should be removed at stated intervals, but invariably before applying fresh medicament. Many acute eczemas are much aggravated by plain water washing. Where cleansing by washing is absolutely necessary, the deleterious influence of plain water may be reduced to a minimum by adding to it salt, bran, starch, slippery elm bark, glycerin, etc., so as to bring its specific gravity up to that of the blood. In order to prevent attacks of itching, etc., from becoming severe after water cleansing, an oily or unctuous substance must be applied to the affected areas immediately after the washing. This may consist of the remedial application prescribed for the affection, or may be a simple, thin ointment or a sterile oil. To both the ointment and oil a small quantity of some antiseptic may be added; in fact, many acute cases run a very favorable course under the application of nothing but a mild antiseptic ointment or oil and then, when the activity of the inflammation is overcome, more stimulating applications are well borne.

In selecting the medicaments to be applied to an eczematous area the character and intensity of the inflammation must be taken into consideration and, more especially, whether discharge is present or absent, also whether thickening of the tissues has occurred or not. If the inflammation is of a high grade and quite acute, the patches must be protected from the effects of the air, as denudation of the rete mucosum is more or less complete where vesicles or pustules rupture, as they do in eczema. The more

or less constant application on cloths of a soothing lotion often succeeds in allaying the violence of acute eczema. They may be made of watery solutions of Boric acid, Aluminum acetate, decoctions of marshmallow or thin gruel, Liquor plumbi subacetatis diluted to the point of comfort, also Lactate of Lead, made by adding one drachm of Liquor plumbi subacetatis to two ounces of fresh milk and well shaken. Or an emollient application may be made of Olive or Sweet Almond oil, plain or emulsified with lime water. One of the substances mentioned as being antipruritic may be added to the lotion or oil selected. It is often of advantage to bathe affected regions with water as hot as can be borne for some minutes and then apply the medicament. This is of service in spite of the fact that ordinary washing or bathing water aggravates most cases.

Should pustular eczema need to be combated, a soft ointment containing one of the antiseptics should be employed until pus formation is arrested. Iodoform, three to five grains to the ounce; Boric acid up to sixty grains; Carbolic acid, one-half per cent.; Ammoniated Mercury, five to ten grains; Bismuth subgallate, ten to sixty grains; Alum, five to ten grains. I have seen marked success follow J. C. White's procedure of dabbing Lotio nigra, diluted or in full strength, according to the tolerance of the patient, on extensive areas of eczema and, after some evaporation of the liquid portion has taken place, thickly applying a soft ointment on cloths. Equal parts of Unguentum aquæ rosæ and Unguentum zinci oxidi is a favorite combination with me for this purpose.

When oozing is no longer a marked feature a lotion containing an inert powder comes into play. Powdered Calamin; finely powdered Zinc oxide and Subnitrate of Bismuth are representative of these. Whichever powder is added to a lotion care must be taken that it is left upon the skin in the form of a protective scale until it has accomplished all that can be expected of it. Lotions should be well shaken and then dabbed on affected localities with some fabric that will not enmesh most of the sediment; hence, absorbent cotton is inapplicable here. However, sediments must not be allowed to remain too long *in situ* and form impervious, dried, cracking masses. They should be removed from time to time by soaking them with oil or gently washing them off and immediately be replaced by a fresh quantity.

As the inflammation subsides still further stimulation of the skin should be cautiously begun. This can best be done by adding a small quantity of the selected remedy to the soothing lotion, liniment or ointment that has been of service. One of the mercurials often answers remarkably well—Ammoniated Mercury, five to ten grains to the ounce; Red Oxide of Mercury, two to five grains; Yellow Oxide of Mercury, five to ten grains; Nitrate of Mercury in the form of one-half drachm of the officinal citrine ointment to four ounces of Benzoinated lard or Petrolatum. They

can gradually be increased as follows—Ammoniated Mercury and Yellow Oxide of Mercury, one drachm to the ounce; Red Oxide of Mercury, ten grains to the ounce; Citrine ointment, one drachm to seven drachms. They must be used in gradually augmented strength and only with the greatest caution. At the least sign of increase in the inflammation they must be withdrawn, and simple soothing measures substituted for the stimulating ones. Patients should be cautioned against a possible aggravation, and directed not to use stimulating applications indefinitely and without skilled supervision.

Tar is a stimulant that holds an important place in dermatological practice. It can be used in the form of the ordinary North Carolina tar or *pix liquida*, oil of cade, oil of birch, oil of beech or *liquor carbonis detergens* (the latter being an alcoholic solution of coal tar), but must be started in very small quantities, five to ten grains of the more solid *pix liquida* or five to ten drops of the liquid forms. It may be incorporated in lotions, liniments or ointments, and its strength increased to the point of toleration when it proves to be acceptable to a given patient. The same thought of adding it in gradually increasing quantities to the soothing application holds good of tar as of the other stimulating substances just mentioned.

Stimulating lotions are not to be kept constantly applied as can be done with the sedative ones, but they are to be dabbed on several times a day. Similarly, stimulating ointments must not be applied in quantity and kept exerting their effect all the time. They are to be rubbed into the affected regions with light pressure and for but a moment when their mildest effects are to be produced. Later, a little more pressure may be exerted while applying them, and it may be practiced for a longer time. Their constant application is only permissible when their full effects are desired—usually on much thickened patches.

When the inflammation is markedly subsiding it is well to gradually lay aside stronger measures and resort to soothing ones again. If an erythematous condition replaces the more active manifestations, it is even possible that dusting powders may come into play and conclude the cure. Dusting powders have already received consideration under the various erythemata and need not again be enumerated here. However, many times it is desirable to add an antipruritic to them. Powdered Camphor, ten to twenty grains to the ounce; Salicylic acid, five to ten grains; Tar, twenty to sixty grains; Salol, five to ten grains; Carbolic acid, five to ten grains, are all useful.

When much thickened patches of a chronic character come under treatment the best plan is to violently stimulate them to active inflammation, as they often disappear when the acute process subsides. It need hardly be mentioned that such a procedure should never be entrusted to

the patient, but should always be done by the physician, and only when he is sure that he can subsequently observe the effects of the treatment. Hebra's method is first to be mentioned. It consists of rubbing a small piece of green soap into the affected area and then thoroughly washing it by means of a piece of cloth dipped in hot water. The outer layers of the patch are removed by this process and some oozing follows. Careful drying is followed by the application of Diachylon ointment thickly spread on gauze or muslin. This procedure is to be repeated at least once daily until infiltration has completely disappeared. The same result can be accomplished by melting away the thickened epidermis with liquid potassa applied on cotton or an applicator. The caustic must be well neutralized by dilute Acetic acid after each application and a protective ointment, such as the Diachylon ointment, worn on the locality treated. A 22 to 25 per cent. Salicylic acid ointment possesses similar virtues as the liquor potassa in dealing with thickened, horny epidermis.

Regional Eczema.

The principles down for combating eczema hold good wherever the rete mucosum becomes affected with the inflammation termed eczematous, and yet, at times, a slight modification of the treatment is necessary when certain localities are invaded by it; hence, a short description of some of these modifications is advisable.

Eczema of the Head (*Eczema capitis*).—The head is often the site of an outbreak of the disease in infants. In them it is necessary to look to the removal of the causes which provoke it. Dietetic errors are to be corrected in many cases, irregular feeding, overfeeding, some of the abominations on the market termed infant foods, all may be factors in some cases. Forcible removal of the remnants of the vernix caseosa from the scalp by means of fine-toothed combs, etc., and washing young children in soapy water and then not rinsing all of the soap off with clear water are often external causes, and they are operative even in families where the child receives what is termed the best of care.

Where a goodly quantity of hair exists in infants and young children it should be cut short, both for the purpose of facilitating the removal of crusts and the application of medicaments. Nowhere are local applications more poorly borne than on the scalp and face in attacks of infantile eczema; therefore the mildest and least irritating remedies should invariably be prescribed at first. Careful cleansing with a bland oil, such as Olive or Sweet Almond oil, at times with the addition of a small quantity (one-half of 1 per cent. or less) of Carbolic acid is all that is required for some time in many of the cases. Pustular manifestations may be conquered by the addition to the oil or a thin ointment (such as rose water ointment, plain or with an equal quantity of Zinc ointment or Benzoinated lard), of three to

five grains of Iodoform or five to ten grains of Bismuth subgallate to the ounce. When pustulation no longer manifests itself the strength of the medicament may be slightly increased—Bismuth subgallate to twenty grains to the ounce; Boric acid, twenty to thirty grains; Ammoniated Mercury, two to ten grains; and the ointment base may be made a little thicker—Zinc ointment alone or with a small proportion of Diachylon ointment. Tar may be added cautiously in some of the cases at this time.

For pustular cases in adults Crocker recommends a lotion of Glycerol of the Subacetate of Lead, one-half ounce; Liquor carbonis detergens, one-half drachm; Rose water ointment, enough to make six ounces.

Eczema of the Ears (*Eczema aurium*).—Here the swelling is sometimes so great that the ears feel as though they could almost be broken by bending them. Calamin liniment can be applied several times daily; Lactate of Lead and Glycerol of the subacetate of lead are also useful. Later, the Lassar paste (Zinc ointment and starch, of each two drachms; Petrolatum, four drachms; at times with 1 to 2 per cent. of Salicylic acid), may be used as a base in which Boric acid, one-half to one drachm or a small proportion of Liquor carbonis detergens or Liquor plumbi subacetatis may be incorporated. Lotio nigra, followed by equal parts of Zinc and Rose water ointments, is also applicable.

Eczema of the Face (*Eczema faciei*).—In infants, as already mentioned, local treatment is often poorly borne, and the character of the applications should not be frequently changed in them except for very satisfactory reasons, and then mostly in the direction of making them milder when they appear to be unsatisfactory rather than to change to one of a different make-up. Boric acid or Oleate of Zinc ointment or Lassar paste occupy a prominent place here.

In adults Calamin liniment or lotion or an emulsion made of well-powdered Zinc oxide, one-half to one drachm; Liquor plumbi subacetatis, two ounces; Olive or Sweet Almond oil, two ounces, should be employed at first.

Eczema of the Eyelids, or *Blepharitis*, is often found in poorly nourished children. Constitutional treatment is very necessary in these cases and must depend upon the individual case. The crusts should be softened with sterile oil, the hairs extracted and Citrine ointment, one part; Benzoinated lard, seven parts; or four grains of Yellow Oxide of Mercury to the ounce of excipient applied.

Eczema of the Lips.—The patients must be compelled to stop the unconscious moistening of the lips with the tongue, which is often the cause that allows winter winds to bring about dryness and cracking of the lips. Where fissures form, the daily application of tincture of Benzoin, flexible Collodion, or Ichthyol, pure or mixed with an equal quantity of glycerin, will cause them to heal. The use of strong medicaments is in-

advisable, a plain unctuous mixture often sufficing to remedy the trouble. This may be plain Rose water ointment, a Tragacanth solution, or a mixture of Lanolin and Olive oil. None of the applications should be laid on in quantity, but a very small amount should be used and well rubbed over the lips and the excess wiped off. I have often found that patients who habitually wear too thin clothing in winter time present the more intractable cases of this disease.

Eczema of the Beard.—The hair should be kept closely cropped so that crusts can be kept from forming and to render their removal easy. Shaving can be practiced so soon as the inflammation shows slight signs of improvement, but must invariably be followed by oiling the shaven region with sterile oil. Epilation must be practiced where pustulation is marked and helps to shorten an attack; in fact, the treatment recommended for sycosis is often applicable, but local remedies must be used in quite mild strength.

Eczema of the Hands (*Eczema manuum*).—The disease in this locality is often troublesome to combat, and all sources of irritation must be sought and dealt with according to the particular patient. Many substances come in daily contact with the skin while a person is pursuing his vocation, and which he disregards in describing his trouble, by reason of the fact that he has handled them for long periods without apparent ill-effects. Careless drying of the hands after washing them, or the necessarily frequent washing demanded by some callings, as that of the physician and dentist, is a causative factor that must not be overlooked when no irritant is habitually handled. Where frequent washings are required each one should be followed by thorough drying, then rubbing the one hand with the other until every vestige of moisture is removed, and then a bland oil or non-medicated ointment well-rubbed into the skin and finally well-rubbed off with a clean towel. Even very much irritated patches can be made to disappear by such a course of treatment and stronger measures reserved for intractable cases.

Eczema of the Palms (*Eczema palmarum*) requires the removal of the usually very much thickened epidermis. It may be rubbed down with pumice stone or removed by a thick layer of a 15 to 25 per cent. Salicylic acid ointment. After the hypertrophic condition has been gotten out of the way a bland ointment, such as Boric acid, one-half to one drachm to the ounce or Diachylon plaster in full strength or diluted, should be applied until the resulting irritation is allayed. Then keratolytic measures are again to be used—Salicylic acid, ten to sixty grains to an ounce of Lassar paste. Jamieson recommends Pyrogallic acid, five to thirty grains; distilled water and Oil of Sweet Almonds, of each two drachms; Lanolin, one-half ounce. When the eczematous process is well on the way to disappearance a mixture of ten to sixty grains of Ammoniated Mercury; ten

to thirty drops of Oil of Cade; and ten to thirty grains of Salicylic acid, has proved curative.

Eczema of the nails needs to be treated by removing the thickened mass of epidermic accumulation from beneath the free border of the nails by Liquor potassa on a minute swab and then neutralizing it by dilute Acetic acid. Working a Salicylic acid ointment beneath them is also helpful, as is Oleate of Tin in the strength of ten to sixty grains to an ounce of Lanolin and Olive oil. Progress in any event is bound to be slow, and the patient must be made cognizant of that fact.

Eczema of the Genitals.—No curative results are to be expected in this form of the disease unless absolute cleanliness is persisted in. Urination and defecation must invariably be followed by careful washing of the neighborhood of the meatus urinarius and anus. The effects of sweating must be combated by placing absorbent dressings in contact with the parts and frequently changing them. The genito-crural folds and perinæum must have impalpable powder dusted on them after applying the remedies selected, and if they are incorporated in ointments the quantity of the unguent must be small, both for the purpose of avoiding the mussiness resulting from the use of large quantities of greasy materials, and to prevent the rancidity which it is possible to have occur where adjacent folds of skin habitually remain in contact.

Eczema of the Legs (*Eczema crurum*.)—The fact that varicosis is frequently causative of eczema below the knees, or exists as an impediment to rapid involution of inflammation in this locality, demands that the venous circulation be aided as much as possible by rest in bed or, where that cannot be obtained, by snug support by means of a light bandage. Acute outbreaks are aided by compresses wet with Boric acid or Aluminum acetate solution or Liquor plumbi subacetatis more or less diluted. As the violence of the outbreak subsides Calamin liniment or the Zinc oxide, oil and lime water emulsion can be applied, as can also one of the bland ointments, such as one of Boric acid. The ulcers which many times form are very amendable to raying with the ultra violet light.

Where subacute conditions persist for a long while, Unna's gelatin paste is to be applied from time to time. Its formula is—Oxide of Zinc and Gelatin, of each one and one-half drachms; Glycerin, three drachms; Distilled water, four drachms. To this various medicaments may be added as they are required. It is to be warmed in a water-bath and painted on with a broad, soft brush and allowed to cool. At times it is advisable to apply a light gauze bandage over it before it dries and thus insure greater support to the tissues than the paste alone would give.

Remedies.—Internal medication can only successfully cope with eczema when the remedy is selected according to the general conditions needing to be rectified in a given patient. Indications presented by local

manifestations are at times uncertain guides, in that they are generic and not peculiar to a certain form of outbreak. If a perfect cure of the disease is brought about by internal treatment the patient will be in better health after an attack has disappeared than he was before that time; while merely aiding nature to conquer local inflammation will leave him predisposed to further, and possibly more obstinate, attacks of eczema. No stronger injunction can, therefore, be laid down than that each case should be studied by the physician as thoroughly as it lies in his capacity to do.

The following remedies are some of the more prominent ones indicated by local manifestations.

Erythema.—*Ammonium carb.*, *Belladonna*, *Benzoic acid*, *Chinin. sulph.*, *Comocladia*, *Croton tigl.*, *Dulcamara*, *Hydrastis*, *Juglans cin.*, *Kali bich.*, *Kali iod.*, *Ledum*, *Mercurius sol.*, *Mezereum*, *Nitric acid*, *Pulsatilla*, *Rhus tox.*, *Salol*, *Silica*, *Thuja*, *Zincum*.

Papules.—*Anacardium*, *Arsenicum iodat.*, *Benzoic acid*, *Bovista*, *Bryonia*, *Carbolic acid*, *Causticum*, *Clematis*, *Comocladia*, *Conium*, *Dulcamara*, *Graphites*, *Hepar*, *Hydrastis*, *Juglans cin.*, *Kali bich.*, *Kali carb.*, *Kali iod.*, *Kreosotum*, *Ledum*, *Lycopodium*, *Manganum*, *Mercurius sol.*, *Mezereum*, *Natrum mur.*, *Nitric acid*, *Nux vomica*, *Oleander*, *Petroleum*, *Pulsatilla*, *Rhus tox.*, *Rumex*, *Sepia*, *Silica*, *Staphisagria*, *Sulphur*, *Thuja*, and *Zincum*.

Vesicles.—*Bovista*, *Bryonia*, *Calcareo carb.*, *Cantharis*, *Causticum*, *Chelidonium*, *Clematis*, *Conium*, *Cornus circ.*, *Crotalus*, *Croton tigl.*, *Dulcamara*, *Graphites*, *Kali iod.*, *Kreosotum*, *Lycopodium*, *Manganum*, *Mercurius corr. and sol.*, *Mezereum*, *Muriatic acid*, *Natrum mur.*, *Nitric acid*, *Oleander*, *Petroleum*, *Psorinum*, *Pulsatilla*, *Rhus tox.*, *Sepia*, *Silica*, *Staphisagria*, *Sulphur*, *Thuja*, *Zincum*.

Pustules.—*Antimonium crud.*, *Arsenicum iodat.*, *Bovista*, *Calcareo carb.*, *Cicuta*, *Clematis*, *Conium*, *Crotalus*, *Croton tigl.*, *Graphites*, *Hepar*, *Hydrastis*, *Iris vers.*, *Kali bich.*, *Kali iod.*, *Lycopodium*, *Mezereum*, *Muriatic acid*, *Natrum mur.*, *Nitric acid*, *Nux vom.*, *Oleander*, *Petroleum*, *Phosphorus*, *Psorinum*, *Pulsatilla*, *Rhus tox.*, *Silica*, *Staphisagria*, *Sulphur*, *Thuja*, *Zincum*.

Scales.—*Alumina*, *Arsenicum*, *Arsenicum iod.*, *Borax*, *Calcareo carb.*, *Calcareo fluor.*, *Graphites*, *Hydrocotyle*, *Kali carb.*, *Kali phos.*, *Kreosotum*, *Mercurius sol.*, *Mezereum*, *Natrum mur.*, *Rhus tox.*, *Sulphur*, *Thuja*.

Lilienthal presents the following repertory of eczema according to location :

Of scalp : *Arsenicum*, *Borax*, *Bromine*, *Calcareo carb.*, *Graphites*, *Iris*, *Lappa*, *Lycopodium*, *Sulphur*, *Vinca minor*. **Scabs on scalp, moist** : *Graphites*, *Lycopodium*, *Psorinum*, *Rhus*, *Ruta*, *Silicea*, *Sulphur*, *Clematis*, *Hepar*, *Natrum mur.*, *Staphisagria*, and *Thuja*. **Scabs moist and foetid** : *Graphites*, *Lycopodium*, *Mercurius*, *Natrum mur.*, *Oleander*, *Rhus*, *Silicea*, and *Sulphur*. **Hair matted** : *Borax*, *Fluoric acid*, *Graphites*, *Mezereum*, *Natrum mur.*, *Psorinum*, *Sarsaparilla*, and *Vinca*. **Dry crusts** : *Arsenicum*, *Calcareo*, *Mercurius*, *Sepia*, *Silicea*, and *Sulphur*.

Eczema from occiput to face: *Calcarea, Clematis, Graphites, Lycopodium, Psorinum, Sepia, Silicea, Staphisagria*, and *Sulphur*. **On forehead:** *Mercurius, Rhus, Sepia, Sulphur*. **On face:** *Arsenicum, Baryta carb., Calcarea, Cicutula, Clematis, Croton tiglium, Dulcamara, Fluoric acid, Graphites, Hepar, Lycopodium, Mercurius, Psorinum, Rhus, Sepia, Staphisagria, Sulphur, Vinca, Viola*. **On corners of the mouth:** *Arum, Graphites, Hepar, Lycopodium, Rhus, Silicea*. **On chin:** *Borax, Cicutula, Graphites, Rhus, Sepia*. **On nape of neck and borders of hair:** *Baryta, Clematis, Causticum, Hydrastis, Lycopodium, Natrum mur., Nitric acid, Sulphur*. **On backs of hands:** *Argentum metallicum, Asarum, Berberis, Kali nitricum, Mezereum, Plumbum, Strontium, Thuja, Zinc*. **On arms:** *Graphites, Mezereum, Phosphorus, Silicea*. **On hands:** *Arsenicum, Graphites, Lycopodium, Mezereum, Phosphorus*. **In bends of extremities:** *Ammonium carb., Bryonia, Graphites, Ledum, Mercurius, Sepia, Sulphur*. **On legs:** *Arsenicum, Carbo veg., Graphites, Lachesis, Lycopodium, Mercurius, Natrum mur., Sulphur*. **On genitals:** *Argentum nitricum, Arsenicum, Caladium, Croton tiglium, Graphites, Hepar, Lycopodium, Natrum mur., Nitric acid, Petroleum, Rhus, Sepia, Sulphur, Thuja*. **Moist:** *Calcarea carb., Clematis, Dulcamara, Graphites, Hepar, Lycopodium, Mercurius, Mezereum, Natrum mur., Phytolacca, Rhus, Sepia, Silicea, Staphisagria, Sulphur, Vinca*. **Dry:** *Arsenicum, Baryta, Calcarea carb., Cantharis, Fluoric acid, Kali carb., Lycopodium, Sepia, Silicea, Sulphur*. **Raw and angry looking:** *Arsenicum, Clematis, Graphites, Hepar, Mercurius, Natrum mur., Rhus, Sulphur*.

Discharge corrosive: *Arsenicum, Clematis, Graphites, Mercurius iod., Natrum mur., Sulphur*. **Offensive odor:** *Arsenicum, Graphites, Hepar, Lycopodium, Mercurius, Mezereum, Psorinum, Rhus, Sepia, Silicea, Sulphur, Vinca minor*.

Eruption itching: *Arsenicum, Calcarea carb., Causticum, Dulcamara, Hepar, Mercurius, Mezereum, Phytolacca, Psorinum, Rhus, Sepia, Silicea, Staphisagria, Sulphur, Vinca, Viola tricolor*.

Sensitive to touch: *Arsenicum, Calcarea, Clematis, Hepar, Lycopodium, Mercurius, Nitric acid, Sulphur*.

The following remedies are worthy of special mention :

Rhus toxicodendron.—This remedy is indicated more frequently than any other in simple eczema of recent origin. The eruption is vesicular upon a red swollen base, associated with severe itching, and sometimes followed by intense burning pains after scratching. It is indicated especially in eczema of the face, when there is œdema of the eyelids, and the pains are burning, itching, and tingling.

Croton tiglium is accorded special mention by Hughes as a remedy which he often gives before *Rhus tox.* when the itching is unusually severe. He also refers to the fact that *Croton tig.* was Bähr's principal remedy for eczema simplex.

Mercurius is highly recommended for eczema rubrum, with which condition its symptomatology corresponds very closely. Dearborn * gives an

* *Diseases of the Skin*, p. 368.

extended description of its therapeutic sphere as follows: "Eczema of the papular, vesicular, or purulent type occurring in the anæmic or cachectic, who have a pale or sallow appearance of the unaffected part in contrast with the intense redness of the affected parts, will often present other indications for Mercurius. Eczema intertrigo beginning as an erythema, on which vesicles form and produce a weeping surface, the intensely reddened skin extending continuous with or in patches beyond the line of contrast of the opposing surfaces frequently calls for this drug. The exudation may become sero-purulent, offensive, and parts of the affected area may appear like superficial ulcers, or look raw and angry. It is sometimes indicated in papular eczema beginning on the flexor surface of the joints of the elbows and knees, and tending to merge together to form thickened scaly patches.

"Pustular eczema in children occurring on the scalp and face, encircled with intensely red areolæ, may suggest this remedy. In such eczemas the pruritic symptoms are worse from exercise, perspiration and at night; better from rest and during the day. Sometimes scratching gives relief, or again it may cause bleeding and painful smarting of the parts. The lymphatic glands often swell in chronic cases."

Cantharis is the remedy recommended by Jousset for the acute inflammatory stage, and on pretty much the same symptoms as those calling for *Rhus*. He remarks: "It is difficult in this instance to specify the characteristics differentiating the two remedies. When, however, there is more burning than itching and the diseased surface resembles a blister, *Cantharis* should be preferred." *

Ranunculus bulbosus is a remedy rarely used in eczema. Its sphere is limited but distinct, it being indicated in eczema attended by thickening of the skin and the formation of hard, horny scabs.

Antimonium crudum is also indicated in eczema attended by the formation of hard, horny excrescences about the affected parts, usually the hands and feet. Hughes recommends this remedy for what he calls eczema impetiginoides. Jousset speaks of it as being a great remedy for pustules. If crusts form they are of a yellow color. It is especially indicated in cases associated with gastric derangements with mapped tongue or tongue coated a thick white.

Meserium is indicated in cases with the exudative diathesis, when hard, thick crusts form, and these crack and discharge freely of pus. Itching is worse at night when the patient is warmly wrapped up. The main lesion is surrounded by pimples.

Graphites is a highly important remedy in chronic eczemas. It is especially indicated by the constitutional build of the patient, usually a

* *Practice of Medicine*, p. 1044.

stout person, with coarse, thick skin, which is unnaturally free of perspiration. The discharge is characteristically thick and glutinous. It is especially indicated when the lesions are situated behind the ears or on the scalp. Fissures form a prominent objective feature of the Graphites eczema.

Arsenicum album is indicated in dry eczema with thickening of the skin and profuse formation of scales. It may also be used when the vesicles change into pustules and form scabs; eczema of the scalp with bran-colored scales extending to the forehead; eczema of the scalp with discharge of offensive pus. Jousset * considers it the remedy for the desquamative stage of chronic eczema. "It is indicated by the dry scales and a burning itch. It should be given after the remedies of the inflammatory stage. Should it be given earlier, it produces inflammatory conditions, and it does more harm than good. It should be given a long time in order to prevent as much as possible relapses."

Calcaria carbonica is indicated in the eczemas of tuberculous children. The eruption appears first on the scalp, and exhibits a disposition to spread towards the face. It often forms thick, whitish crusts. Farrington † mentions the symptoms as indicating Calcaria as follows: "The child scratches its head on awakening from sleep. The change from sleep to activity seems to produce itching of the existing eruption."

Chloral is recommended by Tessier as the chief remedy for the pruritus.

Carbolic acid is referred to by Tessier ‡ as an excellent remedy in eczema. "In cases of the hypertrophic form with ectropion of the eyelids, and associated eczema of the face or of other parts, it has been found excellent. Thus, in the case of a woman with a generalized eczema with resultant ectropion, who came to the Hospital St. Jaques at Paris, this drug was administered in the third dilution, and in less than three weeks she was completely cured."

Hydrocotyle Asiatica has been somewhat extensively used for eczema of the scrotum, anus, and vulvæ.

Comocladia presents indications closely resembling those of *Rhus tox.* It produces erythema, oozing, and papular eruptions, though it does not give rise to vesication. It causes sensations of heat, burning, itching, and stinging which change places and jump about. Aggravation follows contact, scratching, rubbing, and being in the open air. The favorite location for the swelling and diffuse redness is the face; for the circumscribed patches, the trunk and lower extremities, for the suppuration, the legs. It may be indicated in acute eczema of the face with very marked swelling and partial occlusion of the eyes, or in chronic eczema characterized by frequent recurrence of swelling of the eyelids.

* *Op. cit.*, p. 1044.

† *Clinical Materia Medica*, 2d edition, p. 636.

‡ *L'Art Medical*, No. 3, 1899.

Picric acid was praised very highly by MacLennan * used in solution in the strength of one part of Picric acid to eighty-six parts of water, with which the acute eczematous surface is frequently bathed. The itching disappears at once, and there forms a protective coating under which healing rapidly follows. After a few days, when the covering falls off, a very thin, yet normal appearing skin is seen. In eczema of the face and scalp of children it renders good service.

Creosotum is regarded by Dearborn † as a most useful remedy. It produces functional derangement of the sebaceous and sweat glands, a tendency to ecchymoses, papules, vesicles, fissures, scales, and crusts, persistent and unhealthy in character, sometimes degenerating into malignancy, with offensive secretions and rarely a gangrenous tendency. Sensations indicating Creosote are more often described as burning, itching, biting, stiffness or tensive pain. The favorite locations for papular and scaly eruptions are the back of the hands, the face, ears, back and shoulders; for fissures, the hands and on or about the lips; while vesicles or wheals may occur at these points of selection or generally over the surface. The eruptions are worse, as a rule, at night in bed, from pressure of clothing, from friction, but may be relieved by scratching. Papulo-squamous or papulo-vesicular eczema of the dorsal surface of the fingers and hands, sometimes excited by repeated contact with irritating substances, and obstinate in course, frequently present enough indications for Creosote to make it a curative remedy. Moist eczemas of the ears, with offensive secretions, burning and itching pains, worse at night, may be cured by this drug.

Dermatitis Repens.

This is a rare disease of the skin which usually follows a slight injury, frequently to the dorsal surface of the fingers, and is characterized by the development of a lesion that looks much like a superficial pus infection. Its centre has the appearance as though a vesicle or pustule had ruptured, leaving a reddened spot behind; around it the epidermis seems in process of being undermined by a scanty quantity of pus. It has a tendency to continue spreading at the periphery. Subjective sensations are not marked.

The usual antiseptic applications do not have any curative influence on it. Crocker advises the cutting away of the undermined epidermis at its periphery, followed by daily painting with a 10 per cent. solution of Potassium permanganate. This forms a crust and, on its removal, many times the process is found to be cured. If spreading again sets in, a repetition of the painting is to be undertaken. However, rubbing Iodoform into the affected locality every day seems to be a specific for its cure, and is usually rapidly followed by a cessation of its spread and a desquamation of the

* *La Grece Medicale*, No. 11, 1899.

† *Chironian*, February 15, 1898.

undermined epidermis, leaving behind a slight hyperæmia that disappears without leaving any scar.

The remedies which are applicable in this disease are *Arsenicum*, *Cicuta*, *Hepar*, *Kali bichrom.*, *Silica*, *Sulphur*.

Dearborn suggests *Carbolic acid*, *Hepar*, *Mercurius*, and *Ranunculus bulbosus*. *Carbolic acid* is mentioned by him on theoretical and reasonable grounds; *Mercurius*, because of the ability of that remedy to produce serpiginous ulcerations; *Ranunculus bulbosus*, by reason of the relationship of that remedy to eruptions following disease of the cutaneous nerves. *Hepar* improved one of Dearborn's cases, prescribed symptomatically; unusual sensitiveness to cold and touch; red papules or macules appeared ahead of the advancing border.

Impetigo Contagiosa.

This is a superficial pus infection of the skin, mainly of uncovered portions of the surface or of regions to which the hands are readily and frequently applied. It is characterized by the development of pustules, which soon become flattened and spread at the periphery to form pustulo-crusty lesions from the size of a pea to that of a finger-nail. Their contents vary in color from a distinct pus color to that of sero-pus. The crusts are not closely adherent, and dessicate and drop off in a week or ten days, leaving behind reddened, slightly desquamating areas that ultimately disappear. The skin surrounding the lesions remains healthy, giving them a characteristic appearance. The fact that some authorities describe another form of impetigo than the one defined need not be considered at the present time, as the treatment of both forms is practically the same.

The treatment of this affection proves rapidly efficacious if the patient follows the directions given him. I desire, however, to emphasize the fact that aqueous solutions of the various antiseptics, usually employed in surgical cases, are of practically no avail in this disease and their use generally prolongs its duration.

If the lesions have an appearance as though they are decidedly moist the best plan is to treat them first with a powder made up of Bismuth subgallate, one drachm; powdered starch, one ounce. It is to be applied night and morning with a pledget of cotton and allowed to remain upon the skin until the time for the next application arrives, when the skin is to be thoroughly anointed with Olive oil until the old powder and the subjacent crust are completely permeated by the oil, and then the whole is gently washed off with warm water and plenty of soap (which may contain a germicide, such as Mercuric chloride), the skin carefully dried in a way not to spread the infection to the surrounding healthy skin, and fresh powder dusted on with a pledget of cotton. Treatment with the powder is to be continued for several days, or until the affected areas have a more

dry appearance, and then an ointment made of Bismuth subgallate, one drachm; spirits of Camphor, twenty drops; Petrolatum, one ounce, is to be used.

In aggravated cases, in which the lesions rapidly appear and the patches have an angry, irritated look, the ointment is to be kept continually applied, new replacing the old night and morning after the old has been wiped away with a pledget of cotton. So soon as the lesions take on a less active appearance the Bismuth subgallate ointment is to be replaced with one containing Ammoniated mercury. The latter ointment should be used in a mild strength at first, say ten to twenty grains to the ounce of excipient, and gradually increased to sixty grains to the ounce. I have found the Benzoinated zinc ointment very satisfactory as a base; so that the formula would be Ammoniated mercury, ten to sixty grains; Benzoinated zinc ointment, one ounce. In fact, Ammoniated mercury is the specific in cases of this affection when the lesions are not what might be called of a fulminating type; that is, one where they do not cause a markedly irritated appearance of the locality in which they appear, and where new ones do not appear in rapid succession and they do not tend to enlarge quickly.

In all cases stress must be laid upon the fact that the crusts must be removed before the ointment or powder is applied. Putting medicinal agents upon the crusts will not reach the site of the infection, as all crusts are more or less impervious, and remedies will not be curative unless they come in contact with the affected skin. No better way of removing the crusts than first soaking them with Olive oil and then washing them off with plenty of soap on a pledget of cotton. The oil is to be applied over and over again until it has thoroughly permeated all of the layers of the crusts. If they do not come away readily, after the first oil soaking and washing, the diseased area is to be well dried, the oil application repeated and another washing given to it.

The remedies which are applicable in this disease are *Antimonium crud.*, *Antimonium tart.*, *Cicuta*, *Hepar*, *Kali bichrom.*, *Lycopodium*, *Natrum sulph.*, *Phosphorus*, *Picric acid*, *Silica*, *Thuja*, *Viola tric.*

Antimonium crudum occupies a prominent position in the therapy of impetigo. It is especially indicated when the crusts are heavy, and of a thick yellow color. It is often associated with cracks at the corners of the mouth. Hughes speaks in laudatory manner of other Antimonial preparations. The best preparation, however, to his mind, is the golden sulphide, *Antimonium sulphuratum auratum*, when the eruption involves the face. *Antimonium crudum* is reserved by him for impetigo involving the general surface.

Viola tricolor was much used by the late Dr. Bigler in the form of a tea or infusion. His practice was to make an infusion from the dried plant, and this was treated with cream and sugar, and administered to the affected children. In many cases the results were particularly brilliant.

Mercurium.—Impetigo of the face with a deep inflammatory redness ; purulent discharge excoriates other parts of the skin.

Sulphur.—Thick yellow scabs on the scalp with profuse discharge ; great itching relieved by scratching ; purulent eruption of the elbows.

Tanja.—Impetigo following vaccination ; pustules about the knees.

Furunculus.

This is an acute, circumscribed, phlegmonous inflammation of the skin and subcutaneous tissues, accompanied by tenderness and dull, sore and throbbing pain, with symptoms of malaise. The pus infection usually finds entrance into the skin at the site of a hair follicle.

Compresses of hot Boric acid solution or watery solution of Bichloride of Mercury, one to two thousand, will do much to prevent a boil from reaching a large size. If practiced early enough, the injection of a drop or two of Carbolic acid into the site of the infection with a hypodermic needle will abort or very much shorten the duration of the inflammation and materially reduce the amount of pus which usually forms. Free incision under ethyl chloride and swabbing out the depths of the incision with Carbolic acid will limit the course of the trouble. When the activity of the process has been inhibited, cleansing with Peroxide of Hydrogen and a dry dressing with one of the common antiseptic powders concludes the treatment, healing then progressing rapidly with the formation of a small scar.

Poulticing a boil is an abomination.

The remedies which are applicable to this condition are *Anthracinum*, *Apis*, *Belladonna*, *Echinacea*, *Hepar*, *Mercurius viv.*, *Silica*, and *Sulphur*.

Belladonna is indicated in the earliest stage of furunculosis, when there is intense local inflammation, great swelling and heat, and before suppuration has commenced.

Hepar is the main remedy with the advent of suppuration. It may be given before that event to hasten the formation of pus, when the appearances of the parts are such as to show suppuration inevitable.

It is exceptional in the present day of antiseptic treatment that cases will enter the stage at which *Mercurius*, *Silicea*, and like remedies are indicated.

Lachesis is indicated when the furuncles present a dark-bluish color.

Carbunculus.

This is an acute, septic, inflammatory lesion, similar in nature to a boil, but is more virulent. Sloughing of the subcutaneous structures usually occurs simultaneously in a number of places in the affected area, giving rise to cribriform openings through the skin. Pain and systemic involvement are much more severe than in furunculosis, and the lesion is more prone to occupy regions where the circulation is not active.

At the onset of manifestations of infection hot fomentations, either of sterilized water, saturated watery solution of Boric acid, Bichloride of mercury solution (one to one thousand), or the application of the high frequency current is indicated. If the process goes on to deeper invasion free incision under ethyl chloride and thorough swabbing of the depths of the cut are required. When pus formation occurs each of the many openings should be thoroughly swabbed out with Carbolic acid in full strength (melted crystals), as this procedure has a very decided influence in modifying the pain and pus formation. If a case comes under observation late, thorough curetting, under general anæsthesia, and subsequent Carbolic acid swabbings, the latter repeated at least twice daily, must be employed.

As elderly individuals, not of robust health, are the ones who mostly manifest this disease careful attention to diet, hygiene and generally roborant measures must be intelligently applied.

Remedies useful in this disease are *Anthracinum*, *Arsenicum*, *Belladonna*, *Carbo veg.*, *Crotalus*, *Echinacea*, *Hepar*, *Lachesis*, *Lycopodium*, *Phytolacca*, *Secale*, *Silica*, *Sulphur*, and *Tarentula*.

Arsenicum and *Lachesis* are the leading remedies. The majority of cases do best on *Arsenicum* or *Arsenicum iod.* as a routine remedy, providing, of course, there are no indications for other medicines.

Lachesis is indicated by the great intensity of the local inflammation, the bluish color of the parts, the weak pulse, and the great prostration.

Cinchona is an excellent remedy for the prostration after the local process has been checked.

Herpes Zoster.

This is a disease which manifests itself upon the skin in the form of erythematous areas, on which groups of vesicles form. The vesicles are closely crowded, though discrete, and are located over the distribution of the cutaneous branches of one or more of the spinal nerves. It is usually limited to one half of the trunk or to one limb and nearby portions of the integument, and is preceded, accompanied or followed by neuralgic pain.

Rupture of the vesicles is to be avoided as, if such an accident occurs, pain is sure to be experienced where the vesicle existed and healing is very much prolonged. This gives us an important indication for treatment. The parts affected should be covered with a protective that may take the form of a covering of cotton bandaged in place or, what some patients prefer, the wearing of a silk handkerchief next to the skin, in order that the under-clothing may glide over it and not rub against the roofs of the vesicles.

A dusting powder should be frequently applied. This may consist simply of corn starch, rice flour, or talcum, or a medicinal ingredient may be incorporated in one of them. Personally, I feel that all vesicular eruptions (when dusting powders are called for) are very much benefited by the Subgallate of Bismuth. From twenty to sixty grains to the ounce of

impalpable powder is the proper proportion. To this twenty drops of spirits of Camphor may be added, if burning or itching is marked.

Ointments of a bland character are recommended by some authorities, but I am not partial to their use, as it has seemed to me that the erythematous areas are often converted into decidedly inflamed patches, and rupture of the vesicles is made to occur more easily, which should be avoided.

The neuralgic pain is best controlled by the galvanic current, the positive being applied over the affected areas and the negative over the spinal column higher up than the point of emergencies of the nerve affected.

Remedies to be studied are *Acetanilid*, *Aconite*, *Arsenicum*, *Asterias rub.*, *Belladonna*, *Cantharides*, *Cistus Can.*, *Colchicum*, *Croton tigl.*, *Dulcamara*, *Graphites*, *Hypericum*, *Iris vers.*, *Kali brom.*, *Kalmia*, *Lachesis*, *Mezereum*, *Paris quad.*, *Ranunculus*, *Rhus tox.*, *Silica*, *Spigelia*, and *Zincum phos.*

Of these remedies, the greatest experience has been had with *Aconite*, *Cantharides*, *Mezereum*, *Ranunculus*, and *Spigelia*. *Rhus* is probably given more frequently by homœopathic physicians than any other remedy. Hughes says :* "When occurring in young or middle-aged persons, I have always given *Rhus*, and my experience has been that of Russell, that this medicine is of itself sufficient to relieve pain and itching, to shorten the duration of the eruption, and to prevent sequelæ. In old people, however, the latter were apt to occur in the shape of both pruritus and neuralgic pain, until I began to substitute *Mezereum* for these subjects, with which I have been thoroughly satisfied. *Ranunculus*, *Cistus*, and *Arsenic* are other drugs which have caused the phenomena of zoster, and the latter is forcibly suggested by vesicles, pain, and neuralgia, which constitute the affection." The majority of physicians will be in accord with Hughes that *Mezereum* unquestionably is the remedy which proves beneficial in the severe neuralgias which frequently follow in the wake of herpes zoster.

Clifton cured one case of this neuralgia with *Dolichos*.

Cantharis is indicated in the vesicular stage, when the lesions are associated with much burning and smarting. Aggravation is at night, and the relief from cold applications.

Ranunculus bulbosus—Cases of zoster occurring along the areas of distribution of the supraorbital or intercostal nerves. The vesiculation is attended by considerable burning sensations; sometimes the vesicles have a bluish-black appearance; when pain is present, it is of a sharp, stitching character.

Carboneum oxygen is mentioned by Farrington, probably on theoretical grounds only, for he speaks of no experience either by himself or

* *Practice and Principles of Homœopathy*, p. 716.

others. He says: "Carboneum oxygen is prone to excite vesiculation along the course of the nerves (sciatic, trigeminus, etc.), and hence resembles herpes zoster."

Spigelia is indicated almost entirely by the neuralgic symptoms, the pains being of a burning, sticking, and neuralgic character. In the majority of cases it will be prescribed more on this basis than because of the eruption, for in most of the cases in which it has been used it was administered in the pre-eruptive stage.

Arsenic is much used by the old school. Indeed, it is their only remedy for zoster. It is interesting to observe that they themselves admit the ability of this drug to produce a close clinical picture of herpes zoster.

Occasionally, we meet with very obstinate neuralgia following the clearing up of the eruption. The ordinary remedies as mentioned above fail utterly. Palliatives are more or less dangerous. In very old people we may employ, *as a last resort only*, Morphia. The coal-tar derivatives are capable of giving much relief, but are dangerous when there is any cardio-vascular disease. Still, they may be used if their effects are watched carefully.

Aconitia, as recommended in the section on tic douloureux, should be our first recourse when homœopathic remedies fail to relieve the neuralgia.

Some cases thrive best when the patient is given an anti-gout remedy like *Colchicum*, *Ledum*, *Benzoic acid* or *Lycopodium*.

Herpes Facialis.

Is characterized by the sudden development of groups of vesicles, mainly in the neighborhood of the mouth, on the ears, and, at times, on the mucous membrane of the buccal cavity. Vesicles on the free surface show limpid yellow contents at first, but which soon change to a cloudy serum and dessicate, with the formation of a slightly adherent yellow crust. Heat or burning sensations accompany the outbreak.

If the patch is seen in the early, erythematous stage it has seemed to me that vesicle formation is inhibited to a certain extent by the application of Collodion or tincture of Benzoin. When vesicles already exist, powdering the patches several times daily with one drachm of Subgallate of Bismuth to an ounce of corn starch or talc until the crust has become well dried shortens the attack materially. Then an ointment composed of one drachm of Subgallate of Bismuth to an ounce of rose water ointment or Petrolatum terminates the treatment. It must be borne in mind that recurrences are to be expected in a certain proportion of patients; hence, careful individualization in the selection of the internal remedy is of paramount importance. Treating the affected locality twice a week with the high frequency current will eliminate neuritis of the nerve termini when that is a factor in the development of the disease.

Remedies useful here are *Arsenicum*, *Bryonia*, *Cantharides*, *Clematis*, *Croton tigl.*, *Euphorbium*, *Natrum mur.*, *Rhus tox.*, and *Sulphur*.

Terebinthina.—Herpes labialis in association with respiratory and digestive disturbances.

Urtica urens.—Cases associated with catarrhal disturbances of throat or stomach; fever, sensations of heat and itching.

Sulphur.—In weak and debilitated subjects; lesions are situated about the mouth and nose; sour eructations and epigastric discomfort after eating.

Sepia.—Cases occurring in women, associated with utero-ovarian disturbances; lesions situated about the mouth, associated with burning and itching sensations; indigestion attended by empty feeling in epigastrium (atonic dyspepsia); great desire for food.

Natrum Mur.—Lesions are situated where mucous membranes and skin join; cases associated with malarial fevers; pricking and burning sensations.

Dulcamara.—Cases produced by exposure to cold and wet.

Cistus canadensis.—Cases occurring in scrofulous or rheumatic subjects.

Clematis erecta.—Occurring in rheumatic subjects: lesions involve face or genitals, and show a disposition to invade hairy parts. Itching aggravated by warmth of bed and at night.

Arsenicum.—Cases recurring periodically, malarial subjects; severe burning sensations.

Herpes Progenitalis.

This disease is characterized by the repeated development of groups of vesicles on a slightly inflamed base on the genital parts of both sexes. Their appearance is preceded by burning sensations of moderate intensity. Recurrences are common. By reason of the greater tendency to moisture in the neighborhood of the affected parts most of the vesicles become macerated, their contents exude, and a greater degree of inflammation is produced than is commensurate with the gravity of the disease.

Venereal diseases have the reputation of predisposing to attacks of this disease but, to my mind, positive proof of such an assumption is lacking. A long prepuce in the male, however, undoubtedly is a factor to be considered when called upon to treat a case of herpes preputialis. Circumcision should be advised and done in the intervals of the attacks.

The first indication to be met is the prevention of the production of moisture in the genital regions. This can be accomplished by having the parts carefully washed once or twice a day and an impalpable powder dusted on them. The post coronal sulcus and the anterior portion of the cleft of the vulva should receive particular attention. Plain talcum powder or Boric acid and powdered talc should be applied there at least once daily

(after washing and thorough drying). Absorbent cotton or absorbent lint should be used to take up the sweat, etc., as it is poured out upon the surface. When an acrid leucorrhœa is found in a female, washing followed by the application of sterilized Olive oil to the labia minora as well as the labia majora, followed by a dusting powder, is to be practiced habitually.

When the lesions have developed, Subgallate of Bismuth, a drachm to the ounce of powder, is to be freely applied, and, at times, freely dusted on absorbent lint kept in contact with the parts. If vesicles have ruptured and have been followed by marked inflammatory symptoms, Boric acid lotion, Lotio nigra in full strength or diluted with lime water, may be applied more or less constantly on narrow strips of lint held in the preputial sac or between the labia. These wet dressings must, however, be alternated with the dusting powders.

The thought of an affected individual producing pus infection during coitus should be brought to his attention if any purulent discharge is noticed on the site of the eruption.

Useful remedies are *Arsenicum*, *Bryonia*, *Cantharides*, *Carbolic acid*, *Clematis*, *Croton tigl.*, *Dulcamara*, *Hepar*, *Mercurius sol.*, *Natrum mur.*, *Sepia* and *Sulphur*.

Rhus tox. is the most frequently indicated remedy in herpes preputialis. *Croton tiglium* is useful in very similar cases, but is to be given preference when there is considerable local inflammation.

Arsenicum album is the best remedy for chronic or recurrent cases.

Bähr recommends *Hepar* as a remedy for chronic herpes preputialis.

Pompholyx.

This is a disease in which vesicles form and, by a confluence of some of them, bullæ develop symmetrically on the hands and feet. The lesions have no tendency to rupture spontaneously and the disease is of short duration, but manifests a tendency to recur in succeeding warm seasons. The patients in whom it appears are said to manifest symptoms of not being in thoroughly good health.

I have seen the disease appear on the feet of a person apparently in good health after wearing new patent-leather shoes, later developing on the hands. Where ill-health from any cause can be demonstrated the condition must be combated by the means applicable to whatever systemic weakness exists in order to prevent recurrences.

The burning and tingling can be greatly relieved by applying Calamin lotion to the affected areas several times daily. Snugly bandaging each finger after applying Calamin ointment serves the same purpose. Powdered Calamin, two scruples; Zinc oxide, thirty grains; spirits of Camphor, twenty drops; Unguentum aquæ rosæ, one ounce, is a good formula for the Calamin ointment. The Oleate of Zinc or Oleate of Lead

ointment is to be used in the severer attacks. A 1 per cent. solution of Acetate of Aluminum, or any of the astringent lotions applicable to hyperidrosis, shorten many attacks.

The internal remedies to be administered must be sought among those indicated by the particular conditions of ill-health found in individual cases. When robust health is found the remedies suitable are to be selected from such as *Bufo*, *Cantharis*, *Croton tiglium*, *Euphorbium*, *Hepar*, *Natrum sulphuricum*, *Phosphoric acid*, *Ranunculus bulbosus*, *Rhus toxicodendron*, etc.

The entire homeopathic literature of pompholyx emanates from Dearborn. His indications for remedies are as follows :

Hepar.—Burning, tingling, and soreness of parts when lesions coalesce and sharp suppurative sensations are felt, especially when new lesions continue to appear near by, become excoriated and bleed easily.

Natrum sulph.—Vesicular lesions imbedded in sides of palms of fingers or hands in subjects habitually exposed to dampness. Weariness, vertigo, palpitation, etc., generally relieved while in the open air.

Phosphoric acid.—Debilitated subjects, vesicles on balls of toes, soles, and fingers, with deep burning, tension and soreness, worse from cold and touch, better from warmth.

Ranunculus bulbosus.—With unusually severe pains and tendency of eruptions to spread ; sensations worse in the evening.

Pemphigus.

This is a disease which manifests itself upon the surface of the body in the form of successive crops of bullæ that are well distended and rise from a seemingly sound skin (pemphigus vulgaris). Another variety (pemphigus foliaceus) shows a rapid succession of flaccid bullæ (often upon identical sites), which give rise to excoriated, oozing and slightly crusting areas. A third variety is the pemphigus vegetans, whose first bullæ appear within the mouth. After an interval of some days or weeks bullæ similar to those of pemphigus vulgaris develop here and there. They do not heal, however, but leave excoriated surfaces behind, and, where folds of skin exist, they vegetate and assume an appearance similar to condylomata with offensive, viscid secretion.

The treatment of this disease should be directed to an upbuilding of the general health rather than to an endeavor to cure the superficial manifestations, for almost all remedies applied to the skin fail to prevent the formation of new lesions.

The surroundings of the patient should be made as hygienic and cheerful as it is possible to make them. His mind should be put as much at ease as can be done. The diet should be most nutritious, such as milk, eggs, easily digested meats, cod liver oil, flax-seed meal in milk (a tea-spoonful to half a pint), etc. Rest in bed is demanded by most severe cases.

As the bullæ develop they should be punctured in such a manner that no open sore results. When they break accidentally and their roofs are lost it is best to apply an oily substance, such as sterile Olive oil with, possibly, the addition of Carbolic acid (2 to 3 per cent.), or a mixture made of powdered Zinc oxide, one-half to one drachm; Olive oil and lime water, of each two fluid ounces, or Calamin liniment (powdered Calamin, forty grains; powdered Zinc oxide, thirty grains; Olive oil and lime water, of each two fluid ounces). A soft ointment containing Boric acid may be employed instead of the Olive oil or the liniments just mentioned.

If many bullæ become ruptured and much raw skin exists compresses covering the body almost entirely should be used; they should be dipped in carbolized Olive oil, Croker recommending it in $2\frac{1}{2}$ per cent. strength. This will conquer the fœtor accompanying extensive denudation of the surface. The water-bed is helpful in the last-mentioned condition.

The axillæ, groins and any other localities where adjacent surfaces come in contact, as in the obese, should be kept very dry by absorbent dressings and dusting powders containing Boric acid or the Oxide of Zinc, or both. Dusting powders do not seem to be as valuable on the general surface as a liniment or ointment.

Where a case develops many bullæ that are ruptured and in pemphigus vegetans, the treatment should be directed to keeping the surface as aseptic as possible, as, for example, by the Carbolyzed oil, and the mouth should be rinsed frequently with a weak solution of Chlorinated Soda or Permanganate of Potash. In generalized cases soothing baths should be remembered; they may be made with bran, starch, or gelatin. In some patients it is even advisable to make them moderately alkaline. Ointments or oils must be applied to the skin immediately after the bath.

The remedies to be used may be sought among such as *Arsenicum*, *Bufo*, *Clininum arsen.*, *Dulcamara*, *Echinacca*, *Kali brom.*, *Kali iod.* (never in massive doses), *Lachesis*, *Natrum sulph.*, *Phosphorus*, *Psorinum*, *Rhus tox.*, *Setale*, *Sulphur*, *Syphilinum*, *Thuja*.

Arsenicum.—This is an excellent routine remedy. It is indicated by its pathogenesis, which shows that it is capable of producing a general pemphigoid state, the lesions involving also the mucous membranes.

Cantharis.—This remedy has been suggested by reason of its local effects, which, as is well known, include the production of large blisters. Jousset regards it as the first remedy to be thought of in the acute stage of the disease.

Rhus tox. produces small vesicles rather than blebs, and yet it has been extensively used as a remedy for this disease. It is especially indicated in cases brought about by exposure to cold and dampness. In acute cases the onset is attended by fever, physical restlessness, prostration, aching, and general pruritic sensations.

Ranunculus bulbosus.—The pemphigus of newborn children.

Lachesis.—Pemphigus of old people when the trouble is obstinate.

Caltha.—The bullæ are surrounded by a ring and itch a great deal.

Secale.—Pemphigus of old people attended by debility. Internally the patient feels hot while the external surface is cool. Dislike to warmth. Blisters with bloody contents, but leaving gangrenous spots.

Bufo rana.—Pemphigus or preceded by febrile or nervous disturbances in neurotic girls with menstrual irregularities; eruption limited to extremities with pruritic sensations.

Copaiba.—Fætid discharge; lesions involve first the mucous membranes, later the skin.

Natrum sulph.—Pemphigus after long exposure to dampness; in debilitated subjects, worse in damp weather and better in the dry open air.

Phosphorus.—Painful, tense blisters, without areolæ; general debility, attended by moderate sensations of heat, burning, soreness or tension; patients with nervous exhaustion.

Thuja.—Pemphigus foliaceous, with offensive odor and formation of scales.

Dermatitis Herpetiformis.

This is a comparatively rare disease of the skin which runs a more or less chronic course, during which acute exacerbations occur from time to time. The lesions which it presents are erythema, papules, vesicles, and bullæ, or a combination of these lesions, and it differs from other diseases with which it might be confounded by the fact that the lesions show a marked tendency to develop in groups. Subjective sensations are usually intense.

By reason of its chronicity systemic treatment of the patient is of paramount importance, every deviation from the normal in any portion of the body must receive appropriate treatment. Some patients appear in moderately good health when presenting themselves for treatment, and in them the physical examination should be particularly rigid. Many authorities regard the disturbance in the nervous equilibrium as a causative factor, hence the treatment directed to restoring the tone of the nervous system is to be instituted where mental overstrain, violent shock, fright, fear, etc., antedate the development of an outbreak. Proper rest and exercise, freedom from care and worry, removal from surroundings that are nerve racking, static electricity, stimulation or sedation of the spinal cord by vibration, massage, etc., are all required under appropriate circumstances.

So far as the local treatment is concerned, the remedies already mentioned as applicable for managing the various lesions (erythema, papules, pustules, bullæ), which the disease presents are to be used. Antipruritics, as described under eczema, are to be prescribed to render the condition of the patient tolerable to him while the internal medication conquers the malady. Alkaline (Sodium carbonate and bicarbonate, Potassium car-

bonate, Ammonium chloride), or emollient (bran, starch, marshmallow, etc.), baths are often serviceable.

For the relief of the intense subjective sensations Carbolic acid, Liquor carbonis detergens, Resorcin, Salicylic acid and Liquor picis alkalinus are to be used as lotions as directed under eczema. When lotions are not well borne, the mild ointments recommended for acute eczema render valuable service.

Bullæ should be carefully opened and afterwards treated so as not to leave a raw surface, mainly by mild ointments containing a small quantity of an antiseptic remedy; for instance, Carbolic acid one-half per cent.

Dusting powders are also useful under certain conditions, and they may be plain or have some remedial or anti-pruritic agent incorporated in them. The Subgallate of Bismuth and Subnitrate of Bismuth are good examples of astringent remedies, and Carbolic acid and Camphor of anti-pruritics.

Remedies.—The remedies listed under eczema for the different varieties of lesions are applicable in this disease where local manifestations are used for selecting the internal treatment; however, it will only rarely be the case that systemic symptoms will be lacking, and they will clearly point to a given one when elicited by a careful examination.

Psoriasis.

This disease is characterized by the development of papular lesions, mainly on extensor surfaces. The lesions are scaly from the beginning, and the scales are of a mother-of-pearl, shining color, and have a tendency to become heaped up (or imbricated); they are quite adherent. The lesions frequently heal more or less completely at the centre, and at times spread irregularly at the periphery, the coalescence of several of these peripherically spreading bands causing various symmetrical figures to be formed on the skin. Subjective symptoms vary in different individuals, but are rarely severe.

The obstinacy with which this disease resists treatment, even in persons whose general health seems to be much above the average, and the fact that in most patients with psoriasis it is hard to discover appreciable reasons for the existence of a skin disease, should lead to a most thorough investigation of every organ in the body, and of all the excretions. It is only by making such an examination the invariable rule before deciding upon internal and external treatment that we can have any hope of ultimate success in preventing recurrences. Metabolism should be made to go on as nearly normally as possible by directing that the patient take systematic physical exercise, starting in the morning on rising with dumb-bell, Indian club or Swedish movement exercises. These are to be immediately followed by a cold sponge-bath and brisk rubbing of the skin in drying it.

Later in the day he should exercise as much as possible in the open air and sunshine as his vocation will allow. The diet is to be regulated according to the needs of the particular case; but it has been found that complete abstinence from meat has done much to aid the remedial measures employed. The patient should be impressed with the fact that half-hearted acquiescence in carrying out the directions as to diet, hygiene, and treatment is of no avail, and that he must devote his whole energy to elevating his physical condition and to carrying out the requisites that conduce to a cure.

An important step in the treatment is to keep the lesions as free from scales as possible. If only a few circumscribed patches exist and scaling is abundant, by rubbing each one separately with a pledget of absorbent cotton or a piece of absorbent lint or some other fabric dipped in a saturated solution of Salicylic acid in alcohol, the result will be attained. If the scaling is only moderate in degree, washing with ordinary soap and water, spirit of green soap (*sapo viridis*, two parts; alcohol, one part; the solution to be filtered and perfumed, if desired), or with green soap and water alone is sufficient.

When the lesions are numerous and the scaling is thick alkaline baths must be taken. They may be made with from two to six ounces of Sodium carbonate, Sodium bicarbonate, Borax or Ammonium chloride. To these baths from one-half to one ounce of Oil of Cade may be added.

If the attack is an acute one, and the lesions are of a decidedly inflammatory character, it is well to commence the treatment with one of the milder ointments—Calamin ointment (powdered Calamin, forty grains; Zinc Oxide, thirty grains; Petrolatum or Unguentum aquæ rosæ, one ounce), Subgallate of Bismuth, twenty to sixty grains to the ounce or Ammoniated mercury ten to twenty grains to the ounce. Some of the attacks respond nicely to these mild applications, but the majority do not. In this disease, as well as in all others that have already undergone a variety of treatment, it is well to use soothing measures when first starting a new endeavor to conquer an attack.

The remedies which appear to be most efficacious in causing the disappearance of the lesions of the more severe cases are Chrysarobin, Tar and Pyrogallic acid.

Chrysarobin has the disadvantage of causing a marked dermatitis when used in considerable strength and over large areas, and it badly stains the skin and nails while it is being applied, and also the underclothing. If it is used in ointment, from forty to sixty grains should be used to an ounce of Benzoated lard or Petrolatum or a mixture of equal parts of the two. This should be rubbed well into the skin, and the excess afterwards wiped off and a dusting powder applied to the surface treated. The staining of the skin and clothing can be avoided by putting the Chrysarobin in Col-

Iodion or Traumaticin (a saturated solution with either consists of about forty grains of Chrysarobin to the ounce), allowing the Ether or Chloroform to evaporate, and then painting over it plain Collodion or Traumaticin. The resulting scales can be kept *in situ* for two or three days, then removed and a new application made. Or one or two drachms can be put in an ounce of Chloroform and, after the Chloroform has evaporated, the powdered Chrysarobin left behind can be painted over with Collodion or Traumaticin.

Tar can be used in the form of Pix liquida, Oil of Cade, Oil of Birch, or Oil of Beech or the Liquor carbonis detergens. The Pix liquida, Oil of Cade, Oil of Birch and Oil of Beech should be used in the strength of one to two drachms to the ounce of lard or Petrolatum or it may be applied in the same proportions in Alcohol or Collodion. The Liquor carbonis detergens may be used pure or diluted as a lotion or in the proportion of two drachms to the ounce of ointment. Properly diluted and with about ten to twenty grains of Salicylic acid to the ounce (made soluble by the addition of Borax) mixed with it, it makes a magnificent lotion for psoriasis of the scalp.

Pyrogallic acid has a tendency to cause toxic symptoms in the form of renal involvement if used over too extensive a surface and too long and stains the clothing. It is less efficacious than Chrysarobin. If used alone twenty to sixty grains can be used to an ounce as an ointment or paint (Collodion or Traumaticin).

A medicament which lacks the undesirable qualities of Chrysarobin and Pyrogallic acid in that it does not stain and which has been of signal service in my hands is Gallacetophenone. Unfortunately, the makers have declined to furnish it to the profession any more, as it was not purchased from them in such quantities as to make its manufacture pay them. It is to be used as a 10 per cent. ointment or paint. The numerous cases that received benefit from it when prescribed by many dermatologists make it desirable that it should be put on the market again.

Salicylic acid may be added to the ointments or paints with advantage. Quantities up to 5 per cent. may be used with benefit.

Other remedies have been used from time to time and good results reported from them. For instance, Vleminckx's solution may be mixed with equal parts of Liquor carbonis detergens and diluted to the strength tolerable by a given case. Aristol, as a 5 to 10 per cent. ointment or a 10 per cent. paint, has also received commendation.

Remedies.—The remedies listed under the squamous variety of eczema should be studied, and, in addition, *Borax*, *Manganum*, *Natrum arsen.*, *Petroleum*, and *Stillingia*.

Arsenicum is the standard routine remedy when no other medicine is indicated symptomatically. It is used by both schools of medicine. It is especially indicated when the skin is intolerant of even slight mechanical irritation.

Sepia was recommended by Hartmann for psoriasis with deep fissures, painful and oozing. Jousset speaks of it having given him good results "in scrofulous women subject to profuse menstruation and leucorrhœa. It is specially indicated in the psoriasis of the prepuce and nails."

Manganum.—In cases occurring in women at either puberty or the climaxis; menstrual irregularities. This remedy is used by some practitioners as an empirical remedy when Arsenic fails.

Calcarca fluorica.—In cases in which the skin is uncommonly hyperæmic, presenting a deep reddish tint.

Lycopodium.—Psoriasis of the palms, with fissures (Graphites); dark red almost raw appearance of the lesions; scanty scales easily bleeding on slight irritation; cases attended by indigestion and disorders of metabolism.

Carbolic acid was used empirically in a number of cases and good results claimed by Guérin-Meneville.

Asterias rubens.—Cases occurring in neurotic subjects or associated with actual nervous diseases.

Hydrocotyle.—Lesions gyrate in shape; lesions located on the palms and soles with great thickness and exfoliation of the epidermis.

Arnica.—Psoriasis attended by local soreness.

Iris versicolor.—Gastro-intestinal symptoms constitute a prominent feature; the lesions are generally irregular; the surface of the body is scaly and irritated.

Kali bichromicum.—Lesions covered with firmly adherent scales, which burn or smart when the scales fall off or are removed.

Mercurius.—Recent cases, lesions being located on the hands, forearms, scalp, thighs, chest or abdomen; beneath the scales the parts are found to be of a dark or brownish-red color.

Petroleum.—Psoriasis of the hands, scalp, or arms; when the skin is abnormally sensitive, and the lesions are readily irritated or inflamed; attended by fissures, burning or stinging pains; aversion to the open air; aggravation in cold weather; stiffness or crackling in the joints.

Sulphur.—This may be prescribed as an intercurrent remedy when the apparently indicated medicine fails to act; aggravation from warmth of bed; dislike for bathing.

Thuja.—Cases believed to follow vaccination or in individuals giving a history of hereditary syphilis.

Pityriasis Rubra.

This disease appears in the form of diffuse redness or circumscribed, slightly raised, red patches that spread at the periphery. In a couple of days to a few weeks the whole surface is involved and shows marked redness and an exfoliation of papery scales in great quantities. No marked oozing is present at any time during its course, although a very slight

moisture exists beneath the adherent portions of the scales. No inflammatory thickening of the skin is produced by the disease; on the contrary, it feels rather thinner than otherwise.

The patient should be confined to bed during the course of the attack to prevent chilling of the surface, as he will usually be found to be quite susceptible to changes of temperature. On that account care should be exercised while applying local measures, so that no ill-effects will be produced during the exposure of the surface which necessarily occurs while making a universal application. Warm baths in which emollients, such as bran, starch, gelatin or marshmallow are dissolved, may be given from time to time, but they must be followed immediately by inunction with one of the applications which will be mentioned.

The external treatment should be of the simplest. A plain, sterile oil, such as Olive or Sweet almond oil, or a mild, simple ointment will fulfill all the requirements. Equal parts of Zinc ointment and rose water ointment, or a mild Calamin ointment, or the Zinc oxide, Olive oil and lime water, may be used.

R	Zinci oxidi,	.	.	.	.	.	.	.	.	℥ss-i.
	Olei olivæ,									
	Aquæ calcis,	.	.	.	.	.	.	.	℥ss	f℥ii.
	Misce.									
R	Pulv. calaminæ,	.	.	.	.	.	.	.	.	gr. xx.
	Zinci oxidi,	.	.	.	.	.	.	.	.	gr. x.
	Ungt. aquæ rosæ,									
	(or) Adipis benzoati,	.	.	.	.	.	.	.	.	℥i.
	Misce.									

Remedies.—The remedies listed as being useful for squamous eczema should be studied. *Belladonna*, *Borax*, *Manganum*, and *Stillingia* should be added to them.

Pityriasis Rosæ.

This disease is characterized by the development of slightly raised pale red or faintly brownish-red patches that manifest a tendency to scanty desquamation, and which are mainly found on the trunk. It usually appears in the form of a mother-lesion somewhere on the trunk, which outlasts most of the others, is usually the largest and often shows a tendency to heal at the centre, producing a circinate figure in which the scaling is more marked at the periphery of the ring. The other lesions may or may not show an inclination to form circinate outlines. Subjective sensations are usually mild, although marked itching is occasionally present. It mostly runs a self-limited course, getting well in from two or three weeks to two or three months.

The local treatment should be directed to the relief of the itching when that is a marked feature of the disease. The formulæ which are to be prescribed are :

℞ Acidi carbolic, grs. i-iii.
 Olei olivæ, fʒi.
 Misce.

℞ Acidi salicylici, grs. ii-v.
 Olei olivæ, fʒi.
 Misce.

Ointments may subserve a useful purpose, and then we may use :

℞ Sulphur præcipitat, gr. xxx.
 Acidi salicylici, gr. xv.
 Ungt. aquæ rosæ, ʒj.
 Misce.

Crocker recommends the production of nascent sulphur on the skin by first sponging it with a solution of two drachms of Hyposulphite of Soda in eight ounces of water and immediately afterwards applying a solution of one drachm of Tartaric acid in eight ounces of water.

Remedies.—The internal treatment can not always be based on indications presented by the lesions upon the skin. Crocker states that he has seen immediate improvement set in after the administration of Salicin. Remedies of the type of *Arsenicum*, *Borax*, *Calcareæ carb.*, and *Sulphur*, which have produced squamous lesions on the skin and *Natrum carb.*, whose lesions have a brownish color, should be studied.

Arsenicum is mentioned by Hughes as about the only remedy that he can recommend, in which he claims the support of Jousset and Bähr. He suggests that the Iodide may have a better action than the Oxide. In the hands of the old school it has failed in large doses. Its symptoms, including burning and itching sensations with great intolerance of scratching and rubbing, with aggravation at night, should make it a valuable remedy.

Belladonna should prove a valuable remedy in pityriasis rubra on general principles, as it is capable of producing circumscribed and diffused redness of the skin.

Meserum may be useful in both pityriasis rubra and rosea, indicated on the symptoms of chilliness ; burning, itching and tingling with more or less exfoliation of the epidermis.

Natrum arsenicosum has circumscribed pinkish, yellowish or reddish scaly patches with itching worse at night.

Lichen Acuminatus.*

Lichen acuminatis is an inflammatory disease characterized by the development of conical elevated papules with cornification at their apices. At times it is very resistant to treatment. The tendency at the present time is to give this disease the name "Pityriasis rubra pilaris."

* This and subsequent sections on the exudations by Dr. Deming.

Pilocarpine may be given either by the mouth or hypodermically in doses of one-twentieth of a grain three times daily. Its action is necessarily fleeting, and at times quite annoying.

Natri arsenicosi, gr. ij.
Coque cum aqua destillata, fziiij.

If, however, we wish to use Arsenic by the mouth, as is sometimes necessary because of the prejudice entertained by some patients against the injection treatment, we may prescribe the following :

Solutio acidi arsenicosi,	.	.	.	.	.	.	.	0.5.
Aq. destillata,	.	.	.	.	.	.	.	100.0.

Brocq suggests the use of Sodium arseniate and claims good results.

For local use, the following ointment is to be commended :

Acidi carbonici liquefact.,	20.0.
Hydrargyri bichloridi cor.,	0.5-1.0.
Unguent. zinci oxidi,	500.0.

This should be carefully and thoroughly rubbed into the affected parts both morning and evening, after which it should be protected by a loose bandage if the lesions are circumscribed, or if generalized, the patient should cover the anointed skin with a shirt or pair of drawers reserved for this exclusive purpose. This salve is especially useful if administered in conjunction with Arsenic given internally. The treatment should be continued until the condition begins to improve, when the Arsenic and the local applications should be decreased.

When the lesions involve the mucous membrane of the mouth the following application is of special benefit.

Hydrargyri bichloridi,	. . . . .	gr. j.
Ether sulphur.,	. . . . .	ʒj.
Spiritus,	. . . . .	ad ʒj.

This should be applied carefully on a small pledget of cotton wound about a probe to the affected portions of the mucous membranes.

Alkaline baths are frequently of marked benefit, fifteen ounces of Sodium carbonate being added to the bath. Sometimes hot baths may be employed, and green soap may be used with advantage.

Following the baths, a simple ointment, such as 10 per cent. Boric acid salve or Salicylic acid in Olive oil in the proportion of ten grains to the ounce may be well rubbed into the skin.

Sometimes we must use a much more active ointment; then the following may be recommended:

Acidi salicylici,	. . . . .	grs. x-xv.
Ol. amygdal. dulc.,	. . . . .	ʒij-iiij.
Lanolin,,	. . . . .	ʒvj.

Or,

Adipis benzoinati,	. . . . .	ʒss-j.
Glycerini,,	. . . . .	ʒxl.
Vaselini,	. . . . .	ʒj.

Whenever in the course of the treatment there is marked reaction on the part of the skin, the treatment should be discontinued for the time being.

Lichen Planus.

Lichen planus is a disease of the skin characterized by the development of dull reddish papules with flat apices, and marked depressed centres. The eruption may be either diffused or circumscribed, but is apt to present remarkable symmetry. Many sub-varieties named according to the shape or arrangement of the papules, their location and their mode of development have been described, but inasmuch as the treatment of all of these is identical, they may be ignored for therapeutic purposes.

While Arsenic is the most valuable remedy in the majority of cases

according to numerous authorities, there are dermatologists of prominence who condemn it unhesitatingly. It is certainly to be avoided in those cases which suffer from gastro-enteric irritability.

Mercuric chloride has proved of some benefit in a certain number of cases. It should be given in doses of one-twentieth of a grain three times daily, gradually increased until one-tenth of a grain three times daily is taken.

Crocker recommends especially Salicin in doses ranging from fifteen to twenty grains three times daily.

Many cases of lichen planus occur in neurotic subjects, in which case the therapeutic measures recommended for neurasthenic and hysterical patients should be instituted. Many of this class of cases make excellent recoveries without any other treatment than removal from business cares and worries.

It is important in all cases to look after the bowels most carefully.

The **local treatment** should be comparatively mild and soothing, but at the same time stimulating. One application which has a therapeutic action, and at the same time tends to allay the itching, is the following preparation of Tar :

Liquor carbonis detergent.,	1.0-10.0
Zinci oxidi,	
Amyli,	ss 20.0
Glycerini,	30.00
Aquæ destillat.,	ad 100.00

This should be dabbed carefully on the affected area two or three times daily. If the condition becomes aggravated, or if it shows marked inflammation, the Calamin-zinc oxide lotion must be prescribed.

The following application is adapted to those cases in which the itching is pronounced :

Acidi carbolici liquefact.,	ʒv.
Hydrargyri chloridi fort.,	gr. viiss.
Unguentum zinci oxidi,	ʒxvj.

When the condition is small and circumscribed, Chrysarobin is very valuable. It may be used to best advantage in Traumaticin. The formula recommended by Hardaway is the following :

Chrysarobin,	grs. xl.
Acidi salicylici,	grs. xl.
Traumaticin.,	ʒj.

Some physicians have recommended the X-rays. I have never seen any good results from this remedy in lichen planus, and feel that it should never be used excepting in old or chronic cases which have resisted all ordinary methods of treatment.

Lichen Scrofulosis.

This is a disease characterized by the formation of reddish inflammatory papules which fade into the surrounding skin and make their appearance, as a rule, in patients of the scrofulous diathesis.

Constitutional treatment is important above everything else. Fresh air, good plain food, and the administration of the *Calcareas*, *Iodides*, and the *Arsenical* preparations stand pre-eminent as remedies.

Locally, we should use simple applications of oil or fats, which should be well rubbed into the affected parts. Olive oil to which *Salicylic acid* has been added in the proportion of five grains to the ounce is beneficial. Another valuable remedy is *Boracic acid* in Vaseline in the proportion of ten to fifteen grains to the ounce. *Tar* is occasionally of benefit, especially if itching is present. The best preparation is the *Liquor carbonis detergens*, in 1 or 2 per cent. strength, with Zinc oxide ointment as the base.

Chrysarobin in from 2 to 5 per cent. strength or occasionally even stronger, with Traumaticin or some simple ointment is adapted to some cases. The great objection to *Chrysarobin* is its staining properties, which may be exerted not only on the skin but also on the patient's clothing. The patient should always be cautioned on this subject when this remedy is used.

Homœopathic authorities unite in praising *Arsenic*. Hughes * says: "While Arsenic is a specific for it, such large and continued doses are necessary that the practitioner has to be warned against medicinal poisoning. We must see if we can show a more excellent way, and perhaps we can do it by giving Arsenic in the form of the Iodide. Dr. Makechnie narrates a case of a month's standing, which went on increasing for ten weeks under Sulphur, Apis, and Graphites but yielded in three or four weeks when *Arsenicum iod.* in the 3x trituration was substituted."

Jousset † praises *Sulphur* and *Lycopodium* as the leading remedies; *Lycopodium* when the pruritus is worse at night, and *Sulphur* when it is more marked at night and in the morning. Like Hughes and other authorities he favors Arsenic for the chronic cases.

Allen, ‡ who represents the purist element of the homœopathic school, sums the whole subject of the treatment in eight lines, four of which are devoted to the most general kind of directions, and the balance to a list of remedies.

Dearborn, with his customary thoroughness, covers the subject better than any other author. He places the most faith in *Natrum arsenicosum* in the 1x to the 3x trituration. *Mercurius corrosivus* is placed by him as another very important remedy. For *Lichen planus*, he recommends

* *Principles and Practice of Homœopathy*, p. 713.

† *Practice of Medicine*, p. 1050.

‡ *Diseases of the Skin*, p. 127.

Anacardium, *Arsenicum album*, *Arsenicum hydrogenisatum*, *Arsenicum iodatum*, *Berberis*, *Kali carb.*, *Ledum*, *Manganum*, *Mercurius vivus*, *Mercurius corrosivus*, *Natrum mur.*, and *Nux vomica*.

For **Lichen scrofulosis**, he mentions *Arsenicum iod.*, *Baryta carb.*, *Baryta iod.*, *Baryta mur.*, *Calcarea carb.*, *Kali carb.*, *Kali hyd.*, *Mezereum*, and *Staphisagria*.

Anacardium produces skin symptoms which closely simulate those of lichen planus. Dearborn* treated one case which improved very rapidly on the third decimal trituration of this remedy prescribed mainly on the mental condition, which was one of irritability and delusional depression.

Berberis in cases in which the eruption is situated on the inner surface of the forearms, and is attended by sensations which have been described as shooting, tearing, sticking, cutting, and burning in quality relating to the urinary organs, and itching, crawling, and bruised sensations in the skin. The association of urinary irritation is regarded as a strong indication for *Berberis*.

Baryta and its salts, but particularly the Iodide, is indicated in a general way only, *i. e.*, by reason of its clinical relationship to scrofulous conditions generally.

Kali carb.—When there is considerable itching attendant upon the lesions; minute vesicles appear after scratching; aggravation in the open air, or from heat of the body excited by exercise; relief from pressure and cold. Although Dearborn expresses a belief that this remedy* may prove of value in lichen scrofulosis, he notes that no clinical verifications of its use have been reported. He also offers *Kali hydriodicum* as a mere suggestion without symptoms.

Ledum is suggested by papular eruptions on the inner side of the forearms, wrists, fingers, and dorsal surface of the feet; and by stinging pains; pains shifting with tendency to shoot *upwards*; the aggravations are in the evening and from heat of bed; temporary relief from scratching. Gouty or rheumatic subjects, particularly the former.

Manganum.—T. F. Allen† speaks of lichen having been palliated by this remedy. It is adapted to chronic cases only, and more by the associated symptoms than by those of the skin. Anæmia and menstrual disturbances are its important indications.

Sarsaparilla is mentioned by Lilienthal‡ in that it “promises well in this rare but dangerous affection. We find among its symptoms: Dry, itch-like eruptions with emaciation; dry cutaneous eruptions; hardness of the skin; cracks of skin; emaciation with shriveled skin, etc.”

Mercurius corrosivus, as is well known, produces the characteristic associated cutaneous changes of lichen, namely, the harshness and dryness

* *Diseases of the Skin*, p. 333.

† *Handbook of Materia Medica*, p. 692.

‡ *Diseases of the Skin*, p. 17.

of the skin and the dusky papules. Dearborn* says of it: "Lichen ruber at some stage of its course may present cutaneous symptoms similar to those of this mercurial, and it is quite possible that it might share in a measure with Arsenic as a remedy in curable cases of this disease. In lichen planus, mercurius corrosivus should be compared with other drugs in selecting a remedy."

Dermatitis.

In the treatment of the various forms of dermatitis the practitioner must bear in mind that the inflamed skin is a very sensitive tissue, second to none in this respect. All forms of dermatitis must therefore be treated by soothing applications. Those that occur independently of constitutional causes, as those arising from burns, traumatism, and the X-ray require local treatment only.

Dermatitis Calorica.

The favorite applications for the management of dermatitis calorica (burns of the first degree) include *Sodium bicarbonate*, *Carron oil*, and *Picric acid*.

Sodium bicarbonate is used in saturated solution applied on cloths. After the acute symptoms have subsided, we may apply some soothing ointment, but the latter is not indicated until the desquamative stage has been reached.

Picric acid may be applied in the same way in 1 to 2 per cent. solution on cloths. Some practitioners prefer an ointment of the same strength.

An old and favorite application, which is used largely even to the present day, is *Carron oil*, which consists of equal parts of linseed oil and lime water.

Bulkley, quoting Leistikow, recommends the following:

Zinci oxidi,	.	.	.	.	.	.	.	.	.	5.o.
Magnes. carb.,	.	.	.	.	.	.	.	.	.	10.o.
Ichthyol,	.	.	.	.	.	.	.	.	.	1.0 to 2.o.

The same authority uses for burns of the second degree the following:

Zinc oxid.,	.	.	.	.	.	.	.	.	.	5.o.
Creta preparat.,	.	.	.	.	.	.	.	.	.	10.o.
Amyli,	.	.	.	.	.	.	.	.	.	10.o.
Linseed oil,	.	.	.	.	.	.	.	.	.	10.o.
Lime water,	.	.	.	.	.	.	.	.	.	10.o.
Ichthyol,	.	.	.	.	.	.	.	.	.	10.o to 30.o.

Dermatitis Venenata.

Dermatitis venenata is a form of dermatitis produced by various local irritants derived from the animal, vegetable, and mineral kingdoms. The majority of cases, however, originate from the poison ivy. Certain trades

* *Op. cit.*, p. 369.

or occupations are especially prone to this disease. For example, photographers who are obliged to handle certain oxidizing agents, but notably metol, are liable.

The treatment must be conducted on general principles. The source of irritation must be removed as soon as possible. The exposed skin must be washed thoroughly with soap and water. After this, we should apply a weak solution of alcohol; some authorities go so far as to recommend applications of alcohol in full strength.

When vesicles are present, they should be opened under antiseptic precautions and the following lotion applied :

Acidi carbolici,	℥ss.
Zinci oxidi,	℥ij.
Liquor. calcis,	℥j.

This should be kept in constant contact with the affected parts.

Dermatitis Medicamentosa.

The principal element in the treatment is the diagnosis of the case; that is, the recognition of the cause. The drugs which are especially liable to produce dermatitis are Quinine, Salicylic acid, Copaiba, etc.

About all that we can do besides removing the cause is the application of such soothing remedies as the *Calamin lotion* or *Zinc oxide ointment* or *Borated salve* of 10 per cent. strength.

HYPERTROPHIÆ—HYPERTROPHIES.*

Clavus.

(*Corns.*)

Clavus is a hyperplastic development of the horny layer of the skin, the base of which comes to a point and pressing upon the underlying structures of the skin cause more or less pain.

The first thing in the treatment is the removal of the cause, which in nearly all instances is badly fitting shoes. It is important that patients should select shoes adapted to the shape and size of their feet, and not force their feet to fit certain shoes they may happen to admire. It is of importance also that attention be paid to the size of the stocking, for this is a neglected quantity in the treatment of foot lesions.

The active treatment consists in first thoroughly soaking the corn in hot water, after which it should be removed with a knife. Another method is to tease up the edge of the corn, gradually getting it free from the underlying tissues until there comes a time in the operation when it can be lifted out. Both of these measures, which are the ones ordinarily

* By Dr. Deming.

practiced, are purely palliative, for they do not remove the root of the corn; hence, another one will form. Thus it is that patients have "pet corns" to treat year after year. The only radical treatment is a careful dissection, which is an operation to which but few persons will submit, notwithstanding the fact that it will pay them to do so. All operations on corns should be performed with due respect to surgical cleanliness. Every now and then we hear of cases of septic infection following their removal. In view of the dirty character of most clean stockings and shoes, it is a wonder that this accident does not occur more frequently than it does.

The base of all the so-called corn cures is *Salicylic acid*, which is dissolved in Collodion in the proportion of one drachm to the ounce. This is applied to the corn each night. Another method of local application is the Salicylic acid plaster of 10 per cent. strength, which can be purchased in most drug stores.

Cornu Cutaneum.

This consists of a horny growth which projects from the skin, and may vary greatly in length and size in individual cases. Kaposi calls them agglutinated warts. Their only treatment is surgical. After the tumor is removed, the wound should be efficiently cauterized with pure *Carbolic acid* or *Caustic potash*.

Callositas.

Callosities differ from corns in that they are flattened circumscribed thickenings of the epidermis usually brought about by local irritation. If dependent upon occupation, they should not be treated. Sometimes they are dependent upon malpositions of the feet, in which case the patient should be referred to the orthopædic surgeon. Usually, they are treated by shaving off, but if this is done too frequently they show a disposition to increase in growth. Locally, we may apply *Salicylic acid* as described in the section on Corns. Another remedy is the local application of 10 per cent. *Caustic potash* solution, following each treatment by some soothing application. The Potash should be applied with care and only to the callosity, and its action at each sitting should be stopped promptly by plunging the part in water. This method is not to be recommended for lay use, as it can readily produce much destruction of healthy skin.

Verruca.

(*Warts.*)

The best local treatment for the removal of warts is electrolysis when the lesions are small and elevated. Large and extensive warts often prove to be too great for the introduction of the needle. The technique of the electrolytic treatment of warts is as follows: The parts are given a thorough antiseptic cleansing. The wart is then transfixed at its base by

the needle, which is attached to the negative pole of the galvanic battery. The positive electrode consisting of a large flat electrode may be applied to any indifferent portion of the bodily surface. The current is then turned on until three to four milliamperes are registered on the meter. The treatment is continued for from one to three minutes, according to the size of the growth. During the passing of the current, minute bubbles will be observed to emerge from the points of entrance and exit of the needle. If the wart is a moderately large one, its base should be again transfixed by the needle, but this time in a direction at right angles with the first insertion. It is not to be expected that this treatment destroys the wart at once. If the treatment is to be successful, the wart after a time turns black, and is wholly cast off. If some part of the wart still remains active, there should be another treatment at an early date before the growth has time to redevelop.

Very large warts should be treated by snipping off or by radical excision. In the operative treatment care must be observed that the entire tumor is removed. To make certain, it is good practice to scrape the wound with the dermal curette.

All acid applications and other cauterants, however mild, are to be deprecated. It is not always possible to control their action, and we have better methods of treatment.

The X-ray, though mentioned favorably by some dermatologists, is absurd, as it is too unsafe in comparison with the simplicity of the efficient measures at our disposal.

Some cases recover under internal medication. The remedy which enjoys the greatest popularity is *Thuja*, which may be used in potency or in large doses (gtt. xxx) of the tincture. Other remedies recommended are *Baryta carb.*, *Arsenicum*, *Hydrocotyle*, *Phosphoric acid*, *Zincum sulph.*, and *Psorinum*.

Keratosis Palmaris et Plantaris.

This consists of a hardening of the skin covering the palms of the hands and soles of the feet, even to the extent of producing horny plates.

The treatment in a general way is that of *Callositas*. At the same time, it is well to note that special remedial measures have been recommended. Brocq advises large doses of *Sodium arseniate* together with the *Bromides*. Unna succeeded by perseveringly painting the lesions with 10 per cent. solution of *Salicylic acid in ether*, to which a little fat had been added, in greatly relieving a series of cases. In the more severe cases he employed a 20 per cent. Salicylic acid plaster, the application of which may be repeated as found necessary. Brooke cured one case by *Ichthyol* in three minim doses internally, and advised *Ichthyol* and *Salicylic acid* ointment locally. After apparent cures of this disease there is great tendency to relapse.

Aspirinum rubrum.—This remedy it is well known has a remarkable affinity for the skin of the hands and feet. This in conjunction with its associated symptoms should make it a valuable remedy in keratosis of these parts of the body. We have as symptoms sweating of the hands, tendency to the taking on of fesh, aggravation from cold water and pressure.

Sapra sap.—This remedy likewise has sweating of the hands and soles of the feet followed by dry, thick, parchment-like condition of the skin on these surfaces. The *Sapra* preparations are also useful in keratosis semilis.

Succus faurax.—Keratosis palmaris et plantaris, aggravation from damp weather and the standing position.

Curra.—Sensations of soreness, tenderness, and numbness are prominent features, aggravation following washing.

Hibiscus.—Lesions affect the soles of the feet only, sensation of numbness with constriction in the parts involved.

Sanguar.—Lesions are attended by evidence of venous engorgement of the skin, excessive sweating of the palms and soles with burning sensations.

Keratosis Pilaris.

This is an accumulation of epithelium cells which block up the orifices of the hair follicles, and is usually found on the extensor surfaces of the arms and thighs.

The treatment is mainly mechanical and hygienic. The patient must take daily baths, employing cold water, rubbing the affected parts briskly with a coarse, rough towel. Following the bath an ointment of a simple salve is beneficial.

Debarber recommends as possible remedies *Albura sap*, *Morax* ~~and~~, and *Sapropilax*.

Succus gingivalis.—Keratosis semilis. Changes in the color of the skin to a vary coppery or greenish hue; by dry, harsh, wrinkled or greasy condition of the surface; by eruptions having the appearance of small excoriations in or near the skin; gouty or scrofulous history; sensitiveness to atmospheric conditions.

Succus betulae.—Cases occurring in scrofulous or tuberculous children.

Morax variator.—In tubercle of children.

Sapropilax.—Indicated in its general symptomatology.

Keratosis Follicularis.

Keratosis follicularis is a very rare disease, consisting of a hyperkeratinization of the epithelial cells located around the openings of the sebaceous glands in the hair follicles and resulting in the formation of small papules.

which, when the hand is passed over the lesions, give a sensation which may well be compared to that imparted by a nutmeg-grater.

The treatment is practically that of ichthyosis, which we have already described. The measures to be employed include frequent bathing, repeated oily inunctions, or green-soap inunctions after the baths, and the application of *Beta-naphthol*, *Resorcin*, or *Salicylic acid* ointment, but in weaker strengths than advised for ichthyosis. Unusual care must be taken lest the ensuing dermatitis spread beyond control.

Mook has reported favorable results from the X-ray, which is applicable to a certain number of cases. It really should not be tried, however, until the case has been found to resist the ordinary measures. In exceptional cases, the lesions have been known to disappear in winter. This fact has led Hardaway and Grindon to suggest the trial of a residence in a northern climate.

Porokeratosis.

This likewise is a very rare disease of the skin. It is a hyperkeratosis manifested in eccentrically developing areas, slow and insidious in its course, appearing first as a wart or callus, finally spreading by a well-marked peripherally raised border, and presenting a depressed centre.

Keratolytic drugs are useless. Curettement was tried by Gilchrist, but the result was temporary. Excision is about the only successful treatment thus far employed, but it is open to the objection of leaving a scar. Strong acid *Nitrate of mercury* on a wooden point pressed into small areas at a time is recommended by Crocker. The X-ray is suggested by Hardaway, but so far as I know it has not been sufficiently tried out to name the results.

Keratosis Nigricans.

In this we have still another very rare disease of the skin. It is characterized by slow development, as a rule, usually involving the neck and flexor surfaces generally, characterized by papular growths associated with pigmentation. It occurs very frequently in persons who have malignant disease.

The latter class of cases usually make good recoveries following the removal of the causative malignant tumor.

The idiopathic cases, unless the lesions are situated in the axilla or other places where they give rise to great annoyance or irritation, should be let alone. If treatment is necessary, excision is about our only resource, providing the lesions are situated in localities amenable to the knife.

Angiokeratoma.

This is a disease which usually develops on the extremities, especially following chilblains, and consists of a vascular warty growth appearing along the lines of the dilated bloodvessels.

The curative treatment consists in the destruction of the tumor and the bloodvessels by the introduction of the negative electrolytic needle. It is a good plan to give the tumor itself a special application by transfixion, as described under Verruca.

Care should be taken during cold weather to protect the affected parts from all unnecessary exposure, however slight.

Scleroderma.

Scleroderma is hardening of the skin, circumscribed or diffused, the margins of the lesions gradually merging into the surrounding tissues. The parts affected appear to be adherent to the subjacent structures; the sensation imparted to the examining hand has been compared to that imparted by touching a frozen cadaver without the accompanying sensation of cold.

This is a disease in which the building up of the general health of the patient by careful attention to hygienic and general medical treatment is of the highest importance. Constitutional conditions must be corrected. The circulation in particular must be investigated, and any weakness or obstruction relieved. The treatment at best is unsatisfactory. General and local massage with inunctions of Olive oil twice daily will prove of some value.

Electrolysis has been used with some success in the treatment of the circumscribed varieties. Repeated seances are necessary.

Another good remedy is *Thiosinamin*. A 10 per cent. solution of this should be prepared in twenty parts of glycerin and eight parts of water. Of this solution fifteen minims should be injected hypodermically every second day.

The internal remedies include *Nux vomica*, *Rhus tox.*, *Bryonia*, *Cannabis indica*, *Graphites*, *Hydrocotyle*, *Opium*, *Sodium salicylate*, and *Salol*.

Some dermatologists have claimed good results from the hypodermic use of the newer arsenical preparations and the internal administration of *Thyroid extract*.

Sclerema Neonatorum.

This is a hardening of the skin present at birth or developing shortly thereafter. Its etiology is questionable. At the same time a suggestion as to causation is derived from the fact that a few dermatologists have reported cures following inunction by mercury. The principal point, however, in the treatment is to secure nourishment, which usually necessitates feeding by the nasal tube. The child must be warmly covered and frequently rubbed with oil. Joseph suggests galvanization of the sympathetic. When the lesions are general the result is commonly fatal.

Œdema Neonatorum.

This disease differs from the preceding in that the sclerosis is associated with œdema. It must not be confounded with dropsy dependent upon heart or kidney disease. The treatment of the two affections is essentially identical.

Apis mellifica should be useful judging from its symptomatology, but there is no clinical experience with it.

Bryonia is suggested by Dearborn, because of its ability to produce hypertrophy of the subcutaneous connective tissue; hence, it might prove useful in sclerema as in œdema neonatorum.

Secale has been suggested on general pathological grounds for both œdema and sclerema neonatorum.

Ichthyosis.

(*Fish-skin disease.*)

Ichthyosis is a developmental (occasionally acquired) cutaneous disorder characterized by dryness of the skin and the formation of scales of various degrees of hardness and distribution, and oftentimes associated with warty growths.

Like all developmental diseases, ichthyosis offers rather unfavorable prognosis as to radical cure excepting in the mild grades of the disease. Much, of course, can be done by treatment to alleviate the symptoms. Numerous experiences of late years have demonstrated beyond all doubt that the administration of *Thyroid extract* has a most remarkable influence in securing the disappearance of the lesions in a certain number of cases. It is not, therefore, a specific. This improvement continues only during and shortly after the period of administration of the medicine, relapse occurring on its discontinuance. The proper dose will range from three to five grains three times daily. Some authorities recommend as much as ten grains three times daily. Care should be observed in using Thyroid extract lest we develop a temporary state of hyperthyroidea.

Numerous internal remedies have been recommended, but the results from the same are such as would be inferred from the nature of ichthyosis, highly unsatisfactory. Those which enjoy the best reputation are *Thuja*, *Alumina*, *Calcarea fluorica*, *Sepia*, *Arsenicum iod.*, *Graphites*, *Hydrocotyle*, *Petroleum*, *Lycopodium*, and *Sulphur*.

Local Treatment.—There are no local measures which will do more than simply remove the excessive formation of scales and render the skin softer and more pliable. In the mildest cases frequent bathing (twice or thrice daily), followed by the application of a simple fatty salve, is usually all that is necessary. In some cases mildly alkaline or branny baths are very useful. It is a good plan to practice brisk friction of the affected skin while in the bath.

Pilocarpine and Jaborandi, which are widely mentioned remedies in old-school literature, are not to be recommended. It is true that they soften the skin by the production of sweating, but their constant use is undesirable by reason of their collateral effects.

In the more severe cases, it is advisable immediately preceding as well as during the baths to make soft- or green-soap inunctions. Following the bath some oily substance should be well rubbed in. Those recommended include *Lanolin*, *Olive oil*, *Vaselin*, and *Cod liver oil*. The latter by reason of its odor is objectionable to many. Steam- and hot-air baths, which have been highly recommended by some authorities, are little more than palliative measures, but should be considered in certain cases.

The severe cases likewise require the application of remedies which macerate the epidermis, such as Beta-naphthol and Salicylic acid. The following formulæ are presented as having proven trustworthy :

Beta-naphthol,	gr. lxxv.
<i>Solve in spirit vini rect., q. s. et adde.,</i>	
Vaselin flavi, ad,	℥iijss.—M.
Resorcini,	gr. xxx.
Unguent. glycerini,	℥iv.
and	
Ac. Salicyl.,	gr. xxx.
Vaselin. flavi,	℥iv.

If, during the course of treatment, the skin reacts to a too marked degree, showing irritation from the applications, the latter should be immediately withdrawn, and all active treatment discontinued for the time. We should at once apply a soothing salve or lotion such as is adapted to dermatitis. The following prescriptions for this purpose are recommended :

Calamin.,	āā
Zinc oxid.,	℥ij.
Glycerin,	℥iij.
Aq. calc.,	℥iv.
Ac. borici,	gr. xv.
Vaselin,	℥iij.

When the lesion is strictly circumscribed, and of limited distribution, it is good practice to try some more active measure than above recommended, such as scraping the affected area with the dermal curette, followed by the application of the Paquelin cautery or a solution of Salicylic acid in alcohol.

But little can be said favorably concerning results from our remedies in the treatment of ichthyosis. *Arsenicum* and *Hydrocotyle* are mentioned half-heartedly by Jousset. Hughes speaks of some good results from *Thyroid extract*. Dearborn mentions *Alumina* as of possible benefit when

PIGMENTATIONS.*

(*Freckles.*)

Treatment.—Many local applications have been recommended ; those which have the tendency to remove the epithelium should be avoided, inasmuch as there seems to follow their use an inclination to even greater pigmentary deposits than those they are designed to avoid. The special offenders in this class of drugs are Mustard and Cantharides. The remedies which will give the best results are *Mercuric chloride* and *Lactic acid*. We may also use pure *Carbolic acid*, applied with a pointed stick to one or two spots at a time. The latter removes the spots by removing the epidermis. If, however, it is repeated frequently it will excite inflammatory action. It must be used with discretion.

[illegible]

Another very good application is a solution of *Nitric acid* in the proportion of one-half drachm to the ounce, applied twice daily. One-half per cent. *Lactic acid solution* applied carefully with a match stick to each freckle until reaction takes place. Then the face should be powdered. The treatment should be discontinued if any dermatitis appears.

Chloasma.

* By Dr. Deming.

For therapeutic purposes, they may be roughly classed under two headings, namely, those due to local irritation and those dependent upon constitutional causes. The latter cases are usually found in women with disease of the uterus and adnexa. The treatment is that of the primary disease. Physicians should, however, make a most careful examination, and determine positively that the trouble is constitutional before starting in with the treatment.

The local treatment in all cases is that of freckles.

Vitiligo.

Vitiligo is an acquired disease of the skin characterized by the development of circumscribed white patches, the result of loss of pigment, the borders of the involved areas being hyper-pigmented.

The treatment is highly unsatisfactory.

In the idiopathic forms, we may succeed by bleaching the hyper-pigmented borders in rendering the lesions less prominent by contrast.

We may also try staining the patches with some substance, such as walnut juice, mitigated to suit the case. Painting the patches with *Chrysarobin* has been suggested by Lassar. Injections of *Arsenious acid* may be tried. *Thyroid extract* had been suggested and tried by a number of observers, but I must confess that I have never seen any good follow its administration.

Miscellaneous Pigmentations.

Albinism, which is a generalized lack of pigment, is incurable. *Argyria*, which is the blue staining of the skin due to excessive use of Nitrate of Silver, is very uncommon at the present day. It is irremediable.

Marks from *Gunpowder* and *Tattoo staining* yield very nicely to treatment, but inasmuch as the technique of the same is very delicate, and the best results can be had only from those who have specialized in their work, it will be wise for the general practitioner to turn such cases over to the dermatologist.

ATROPHIES.

Xerodermia Pigmentosa.

The best definition is that of Kaposi, as follows: "The initial lesions consist of reddish-brown to dark-brown spots from the size of a pin's head to that of a lentil, which appear usually in the course of the second year of life, often preceded by an erythematous or measles-like eruption, which comes and goes for a time to be followed finally by the pigmentation, which is situated upon the face, neck, arms and legs, or, in other words, those parts of the body that are more or less exposed in infancy. The disease usually ends in epitheliomatous degeneration. Death occurs speedily."

The treatment is purely symptomatic. Pigmentary warts should be

removed as soon as possible. Special care should be taken of the eyes, nose, mouth and ears. Curettement and the X-rays have been used by some dermatologists with encouraging results.

Couillaud claims to have obtained great amelioration, even with disappearance of the greater part of the pigment, by intramuscular injections of three centigrammes of *Calomel* in Vaseline or liquefied Paraffin.

Symptomatic Atrophies.

The treatment is of no avail.

Ainhum.

Some benefit is believed to accrue from the division of the constricting bands of connective tissue.

Glossy Skin.

This is an atrophic disorder seen especially in the fingers, and is due to some unknown nervous influence. It usually affects the extremities of the hands and feet. The treatment is protective. The parts should be bathed in hot or cold water, according to the one which gives the most relief.

NEUROSES.*

Dermatalgia.

By dermatalgia is meant a neuralgia or pain in the skin occurring independently of any known pathological change. A strict interpretation of the definition would make the occurrence of dermatalgia an impossibility. Nevertheless, there are cases of "skin-neuralgia" in which our best directed efforts fail to discover an anatomical cause. These have been variously assigned to rheumatism, chlorosis, hysteria, and undiscoverable central disease as causes.

The treatment must be purely symptomatic and directed against alleged causes. Anti-rheumatic drugs, like *Rhus*, *Bryonia*, *Colchicum*, and *Natrum salicylicum*, are commonly indicated. In central or neuritic cases a blister applied over the point of emergence of the nerve supplying the painful area is often beneficial.

As a local palliative, *Menthol* in solution (3ij-3j) or the *Menthol cones* rubbed over the affected part are beneficial.

General analgesics are sometimes necessary. *Morphia* should never be used. Reliance should be had mainly on *Acetanilid*, *Antipyrin*, and *Phenacetin*.

Pruritus.

By pruritus is meant an itching of the skin without visible eruption. For clinical study, we divide pruritus into general and local.

* By Dr. Deming.

For senile pruritus, *Arsenicum*, *Baryta*, *Calcarea phosphorica*, *Cocculus*, *Mezereum*, and *Sulphur*. This variety of pruritus is nearly always dependent upon an unnatural dryness of the skin. Sometimes deficient elimination by the bowels and kidneys are important etiologic factors, and must be considered in arranging the treatment.

Pruritus Hiemalis (*Winter itch*).—About the only special measure for this variety is the avoidance of wearing woolen garments immediately in contact with the skin.

Among the old-school remedies recommended in the treatment of pruritus, *Cannabis indica*, *Gelsemium*, and *Pilocarpine* are the most frequently prescribed. They are, however, but palliatives.

Cannabis indica was first recommended by Bulkley for pruritus hiemalis. It should be prescribed in doses of five minims of the tincture three times daily; the dose is gradually increased until the patient may be taking as much as twenty minims three times daily. It must always be administered well diluted and after meals.

Gelsemium should not be prescribed unless the need for relief is imperative, owing to the large doses required. Ten minim doses of the tincture are given every half-hour until one drachm has been taken or toxic manifestations appear.

Pilocarpine may also be regarded as a rather heroic palliative. The dose is one-tenth of a grain, which may be administered hypodermically or by the mouth.

Atropia is highly recommended by some dermatologists, and much has been claimed for it. It should be given with discretion, *i. e.*, in doses ranging from gr. $\frac{1}{100}$ to gr. $\frac{1}{200}$ three times daily.

Pruritus ani is nearly always due to some local cause, which must be considered in outlining the treatment. These causes include irritable ulcerations of the sphincter, fissures of the anus, hæmorrhoids, constipation, local sweating, gout, and portal congestion. If the physician does not succeed promptly in determining the cause, he should submit the case to a rectal specialist. For local use, the officinal *Yellow oxide of Mercury ointment*, with or without ten grains of Carbolic acid to the ounce, is useful.

The medicines include *Alum*, *Aloes*, *Arsenicum*, *Cina*, *Hydrastis*, *Ignatia*, *Nitric acid*, *Sepia*, and *Sulphur*.

Pruritus Scroti.—The majority of cases of pruritus scroti are dependent upon or secondary to eczema, which in turn is the result of diabetes. The physician must always eliminate the possibility of scabies or pediculosis. The local treatment consists in the application of the *White precipitate ointment* or *Boric acid* lotion.

Internally, may be recommended *Antimonium crudum*, *Croton tiglium*, *Graphites*, *Nitric acid*, *Sulphur*.

Pruritus vulvæ is almost always the result of irritating leucorrhœal discharges or diabetes. The treatment is local cleanliness, for securing which strong solution of Boric acid is the best.

The remedies include *Antimonium tartaricum*, *Calcarea carb.*, *Cantharis*, *Helonias*, *Hydrocotyle*, *Natrum mur.*, *Sabina*, *Sepia*, *Uranium nitricum*, and *Zinc*.

NEOPLASMATA.*

Molluscum Contagiosum.

Molluscum contagiosum is a disease of the skin characterized by papule-like elevations with central depressions, ranging in size from a pin-head to that of a pea, and more or less contagious.

When these lesions are few in number, the best treatment is incision and expression of their contents followed by cauterization of their bases with crude Carbolic acid. If they are pedunculated, they may be cut off with scissors and their bases cauterized as before.

If they are numerous, the best plan is to try first applications of *Ammoniated mercury ointment* in the strength of 40 grains to the ounce of unguent in conjunction with the use of the dermal curette. It is important that the ointment be well rubbed in. If this method fails, then we must incise the lesions and cauterize the wounds with pure Carbolic acid.

Xanthoma.

This is a soft, slightly elevated, flattened, yellowish growth, usually multiple, and commonly located about the eyes, but is occasionally disseminated.

The best treatment is electrolysis. When the lesion is large, which is usually the case, the needle must be introduced several times at a seance. The crusts formed must be permitted to dry before giving additional treatments.

Another method of treatment is the use of *Salicylic acid plaster* of 25 per cent. strength. The plaster should be cut in size and shape to correspond to the lesion, and permitted to remain on for two or three days, when it should be removed. After it has been taken away it will be easy to pick away parts of the new growth. The involved area should be cleansed properly under antiseptic precautions, and some soothing ointment applied until all inflammatory changes have subsided. Then repeat the Salicylic acid plaster at intervals, following the same routine as before, until the entire growth is removed.

* By Dr. Deming.

Xanthoma Diabeticorum.

Xanthoma diabeticorum is a rare affection characterized by papular lesions (simulating pustules), with reddish base and light-colored or yellowish apices, found scattered over the skin of some diabetic subjects. It is usually associated with burning and tingling. It is found most frequently about the eyelids of diabetic subjects; but it may be disseminated.

The treatment is strictly that of the primary condition. Under proper diabetic restrictions the lesions disappear.

If the subjective symptoms are very annoying we may advise the following prescriptions for ointments. They should be used very carefully at first, lest we excite too great a reaction.

Acid. carbolic,	.	.	.	.	.	.	.	.	.	gr. v.
Acidi borici,	.	.	.	.	.	.	.	.	.	grs. xv.
Vaselin,	.	.	.	.	.	.	.	.	.	℥j.
or,										
Liquor carbonis detergent,	.	.	.	.	.	.	.	.	.	℥j.
Zinc oxid.,										
Amyli,	.	.	.	.	.	.	.	.	āā	ʒvj.
Glycerin,	.	.	.	.	.	.	.	.	.	℥j.
Aq. destillat.,	.	.	.	.	.	.	.	.	ad	℥iij.

Colloid Degeneration of the Skin.

This is a colloid degeneration of the connective tissue of the skin, which is characterized by yellowish translucent papules, located usually on the face. The treatment consists in their removal by the curette, or, better still, by electrolysis.

Tuberculosis of the Skin.

Lupus Vulgaris.—This is a new growth produced by the tubercle bacillus, resulting in the formation of papules and inflammatory areas, which in healing form soft whitish scars.

Their constitutional treatment is that of tuberculosis as already outlined in earlier sections of this work.

The tuberculin treatment is worthy of trial, but too much dependence must not be placed upon it.

The local treatment should be early and energetic. The ideal therapeutic measure is total extirpation by the knife; but unfortunately this is seldom practicable by reason of the great progress the disease has made by the time it comes under expert observation. Radical operation in advanced cases leaves too much scarring.

The next best treatment is the *Finsen light*. Remarkable results have been reported by Finsen and his students. There is every reason to believe that much of the success depends upon experience in handling the rays,

and in experience with lupus. The beneficial effects of the treatment are believed to depend upon their bactericidal action. The exposure to the rays should vary from one-half to one hour and a half, according to the depth to which the disease has extended. If the lesion is of but limited extent superficially a few treatments only will be necessary. If, on the other hand, it is extensive, exposures must be made over different areas, a small portion each time. Reaction usually follows the treatment within a period ranging from three hours to three days after the exposure. No new application should be made until the reaction from the previous one has subsided entirely. The course of treatment usually requires several months.

The next best method is Hollender's hot-air cauterization, which is conducted by an apparatus capable of projecting a current of air at 100° C. against the lesion. Its beneficial effect is due to the fact that it produces an extremely superficial destruction of tissue, and, at the same time, it causes the connective tissue to contract and forces the tubercles to become more superficial. One application is usually all that is necessary, but it may be repeated without danger. The advantage of this method, aside from its therapeutic value, is that the scars which it leaves are nothing as compared with those of other methods, the Finsen ray excepted.

Lassar's scarification method has been recommended by many, but I do not think much of it; it has decided disadvantages, and is apt to leave some scarring.

The application of *Potassium permanganate* (10 per cent. solution), as recommended by Schultz, is sometimes of value. The solution is painted on the lesions daily. The tubercular lesions break down and can be easily wiped away.

Another method which I believe to be extremely useful is to go over the lesions carefully puncturing the tubercular nodes with a hollow glass point which has been dipped in *Chromic acid*. The treatment may be repeated every few days for as long a time as may be necessary.

Galvano-cautery is a good method of treatment when lupus involves the mucous membranes.

A simple method which is valuable in some cases is to rub the lesions with a probe tipped with absorbent cotton, which has been previously saturated with strong *Lactic acid*. The bleeding, which is but slight, is readily controlled, after which *Iodoform* and a dry surgical dressing should be applied. This method has the special advantage of destroying only the lupoid tissue, leaving normal structures unaffected.

Pyrogallic acid in 10 per cent. strength is also of use, and for the same reason as that already assigned for *Lactic acid*. The strength of the ointment may be gradually increased up to 25 per cent.

Resorcin has been highly recommended by some authors. It may be prescribed as follows:

Resorcin,	3i.
Zinc. ox.,	
Amyli.,	āā 3ij.
Vaselin,	3iij.

The method of employing this ointment is as follows: A small quantity of the ointment is applied on a piece of lint corresponding in size and shape with that of the lesion, and is bound in position. This should be changed twice daily. This is repeated for two or three days, when there should be marked reaction. Then the Resorcin should be stopped until the inflammatory symptoms have subsided entirely.

The X-rays have been highly recommended in lupus vulgaris, but this remedy is far inferior to the Finsen light.

Lupus Verrucosus.—This is a tubercular condition of the skin characterized by the formation of wart-like excrescences.

The treatment is practically that of lupus vulgaris with the addition of surgical removal of the warts. It does not have as wide a range of remedies as the former variety. Probably the X-ray will give better results in it than in lupus vulgaris. The galvano-cautery has also proven quite useful. If the lesions are treated by curettement, the wounds should be thoroughly cauterized by pure Carbolic acid.

Tuberculosis Ulcerosa.—This is a marked ulceration appearing usually at the mucous outlets. The general treatment is that of tuberculosis. Locally, the lesions should be kept clean, and application of Lactic acid solution of 50 per cent. strength made. This exerts a stimulant action. In some cases curettement followed by the galvano-cautery may be necessary.

Scrofulodermata.—These consist of suppurative and ulcerative conditions of the skin associated with the development of large suppurating lymphatic glands, and other symptoms developing in persons of the strumous diathesis.

The constitutional treatment consists of the general measures required for the treatment of general tuberculosis.

Locally, the treatment is practically surgical. The ulcerations should be kept thoroughly clean; occasionally it is necessary to curette them and make applications of Lactic acid solutions of 50 per cent. strength. Pure Carbolic acid may be used as a substitute for the Lactic acid.

Crocker recommends *Calcium sulphide* in pills of one-sixth of a grain each, three times daily, in conjunction with a general tonic.

Chaulmoogra oil has been recommended internally in the form of capsules, and in doses of ten to twenty minims. It acts admirably when it can be tolerated.

Lichen Scrofulosis.—This is a disease characterized by the development of irregular circumscribed patches of a papular reddish brown in

color, usually pin-head in size and capped with a small scale, as a rule, and associated with more or less itching. The treatment is Cod liver oil and the building up of the general health by hygienic measures and remedies.

Externally, we may use the following :

Liquor carbonis detergent,	. . . . .	3j.
Amyli,		
Zinci oxidi,	. . . . .	āā 3v.
Glycerin.,	. . . . .	f3j.
Aq. destillata,	. . . . .	ad f3iij.

Erythema Induratum (*Bazin's disease*).—This disease is characterized by the development of hard nodular growths along the anterior edge of the tibia. They tend to break down and form ulcers.

There is a marked tendency of this disease to recovery, although it takes place very slowly. The affected area should be carefully supported by a suitably fitting bandage, and the application of some form of Mercury, either in the form of a salve or as a plaster. The best method is to apply the plaster and retain in place with adhesive strips. After the ulcerations have formed they should be kept surgically clean. Rest also is of great importance.

Lupus Erythematosus.—This is a cellular infiltration of the skin characterized by the development of scaly patches of various sizes, which are usually closely adherent, and with a tendency to the formation of superficial whitish scars on healing.

The treatment, of course, is general as well as local. There is a tendency for this condition to heal spontaneously, and for this reason it is not always a good plan to be too energetic in one's local treatment. With due attention to cleanliness and a mild amount of local stimulation, many of these cases make good recoveries. The application of *Lactic acid* solution of 50 per cent. strength is decidedly beneficial.

Crocker recommends *Salicin* internally in doses of fifteen grains in capsule.

Max Joseph recommends the internal administration of *Quinine* associated with applications of tincture of *Iodine* once or twice daily. The initial dose of Quinine is small, and is gradually increased until the patient is taking five grains three times daily. The Iodine is applied about fifteen minutes after taking the Quinine. This treatment is continued until there is marked irritation or reaction, which takes place in from five to ten days, when it is discontinued for a time until all irritation has subsided, when it may be repeated.

Another method of treatment is the application of *Arsenic* in the following solution :

Solut. Fowler,	.	.	.	.	.	.	.	.	.	℥j.
Chloroform,	.	.	.	.	.	.	.	.	.	gtt. ij.
Aquæ destillata,	.	.	.	.	.	.	.	.	.	℥j.

This solution must be thoroughly shaken and then applied twice over the affected area, when it is allowed to dry. This is repeated for from four to six days. We then have a slight swelling with irritability and redness ; in other words, the symptoms of a dermatitis. Then we should discontinue the treatment and apply some non-irritating powder or Zinc salve. After a few days or a week the swelling disappears, and the diseased area becomes pale and dries up and scales. Then we should repeat the applications again, and as the cycle of treatment is gone over and over again the irritation becomes less and less until the lesion ultimately disappears.

Usually this disease is cured in twelve to fifteen weeks without much scarring.

Another application is the following :

Acidi salicylici,	.	.	.	.	.	.	.	.	.	℥x.
Acidi pyrogallici,	.	.	.	.	.	.	.	.	.	℥ijss.
Collodion,	.	.	.	.	.	.	.	.	.	℥iij.

This should be painted on the parts, and its use continued until there is evidence of reaction, when the patient should be given a rest.

Still another application is :

Absolute alcohol,										
Sulphuric ether,										
Spirits of menthol piper,	.	.	.	.	.	.	.	.	āā	℥j.

This solution should be dabbed on the lesion once or twice daily.

Multiple scarification, the Paquelin cautery, and scraping with the dermal curette are useful in some sluggish conditions which resist ordinary treatment. However, these more active measures should be studiously avoided lest we produce much more scarring than is necessary.

A very good application also is *Duhring's solution*, the formula for which is the following :

Zinc sulphat,										
Potassium sulphurett,	.	.	.	.	.	.	.	āā	℥ss.	
Aquæ roseæ,	.	.	.	.	.	.	.	.	℥iijss.	
Alcohol,	.	.	.	.	.	.	.	.	℥iij.	

This to be applied twice daily with a small pledget of cotton.

Many authorities speak favorably of the X-rays, but inasmuch as the majority of cases respond to milder and less dangerous measures this remedy should be regarded as the last resort.

Rhinoscleroma.

Rhinoscleroma is a disease characterized by hard, nodular, elevated growths involving the alæ nasi and the nasal septum, and extending occasionally to adjacent parts, even to the cavity of the naso-pharynx.

The treatment is very unsatisfactory, for no matter how successful we may be at first in relieving the condition the growths always return. An essential feature of the treatment is the maintenance of the patulousness of the nasal passages. This may be done by destruction or removal of portions of the growths from time to time with a sharp curette. The passages may also be kept partly open by insertion of plugs of cotton.

It has also been suggested that the lesions be carefully pared, this operation being followed by the application of a weak preparation of Salicylic acid. A very good plan is to saturate a small cotton tampon with an ointment consisting of the following :

Salicylic acid,	grs. v.
Ichthyol,	ʒi.
Lanolin,	ʒi.

The proportion of Salicylic acid and Ichthyol may be varied according to the degree of local irritation or stimulation the parts will tolerate.

Crocker is very emphatic in recommending *Salicylic acid* internally as well as locally, prescribing ten grains three times daily. With this he applies Carbolic acid in 1 to 2 per cent. strength locally. Lang also uses this drug internally.

Radio-therapy has lately come into vogue as of possible value, and is deserving of trial.

Radical surgical procedures, as excision, curettement, and the cautery are not to be advised unless life is immediately threatened.

A possible therapeutic suggestion for future development is found in the fact that in some few instances the tumors have disappeared following acute infections,

Calcareæ phosphorica and *Thuja* have been suggested as remedies by Dearborn.

Stoukovenkoff has recommended and employed injections of *Arsenious acid* in 12 per cent. solution. He gave 222 injections in one case with good results. This method of treatment is not to be recommended for general use, as its application is exceedingly painful. The dose at first is one cubic centimeter, which is increased gradually until six cubic centimeters are administered. Care must be observed lest we produce symptoms of arsenical poisoning.

Keloid.

There are many varieties of keloid due to a great variety of causes. When the lesions are small the best treatment is electrolysis, transfixing

the base of the growth with the needle attached to the negative pole, and passing through it a current of one to five milliamperes, and allowing it to act for a few minutes. This treatment should be repeated once or twice a week, as indicated by the requirements of the case. In the case of small growths, one treatment will be found sufficient. If it is a large one, the base should be transfixcd by the needle in various directions as often as is necessary.

Excision is applicable to some cases, but it must be borne in mind that the incisions must be carried far beyond the borders of the growth in order to remove it *in toto*. If this is not done properly, there will surely be a recurrence.

Of late years, Thiosinamin has been highly recommended. Unna suggests its use in the following form :

Sapon. unguinin,	10.0.
Thiosinamin,	0.5 to 2.0.

This is a saponaceous preparation which should be rubbed into the keloid.

Again, the drug may be used in the form of a mulled plaster, into which ten to thirty grammes of Thiosinamin are incorporated to the cubic meter.

It may also be used by the injection method, an 8 per cent. solution in Glycerin and water being prepared for this purpose. It is injected into the tissues surrounding the lesion. The dose of this solution is ten minims.

When pain and itching are severe, Stelwagon recommends the following application :

Acidi salicylici,	grs. x-xx.
Emplastr. plumbi,	
Emplastr. saponis,	āā ʒiij.
Petrolati,	q.s. ad ʒj.

When the growths are extensive, we may advise the X-ray, as advocated by Belot, Pusey, and Hardaway.

Graphites, *Lycopodium*, *Fluoric acid*, *Nitric acid*, *Silicea*, and *Calcarea fluorica* are of possible use as internal remedies.

Cicatrix.

Redundant scars are proper subjects for surgical treatment. The measures for their relief include skin grafting, transplantation, excision, X-ray, loosening of their edges subcutaneously, and (when permeated by large vessels) electrolysis.

Internal medication is of very doubtful utility, though *Graphites* has been strongly recommended.

Fibroma.

Fibromata are tumors resulting from the hyperplasia of the connective tissue substance.

The treatment is practically surgical, as internal medication is all but useless. A wide incision should be made about the growth, which is then carefully removed. If they are very small, we may employ electrolysis, the administration of which may be repeated at intervals of a week until a cure is effected.

Other methods of treatment include ligation and the cautery.

Fibromata rarely give the patient any inconvenience other than such as arises from their mechanical presence.

Multiple Fibromata.

Occasionally fibromata appear in multiple form, and in some cases there seems to be a disposition to disappear spontaneously, while in others they are prone to undergo sarcomatous degeneration. Their treatment includes excision, electrolysis, galvano-cautery, and ligature.

The remedies suggested by Dearborn include *Graphites*, *Calcarea fluorica*, and *Lycopodium*.

Myomata.

The only possible treatment for myomata is excision, which is usually rendered necessary by the fact that this form of growth is often attended by more or less pain. Electrolysis may be tried when the tumors are small.

Nævus Vasculosus.

(*Angioma* ; *mother's mark* ; *birth-mark*.)

As commonly seen in practice, two varieties of nævus are especially worthy of mention. One, known as angioma simplex, consists of small, easily compressible reddish or purplish red soft tumors ; the other, known as "port-wine mark," is manifested as diffused patches of redness, which may be either bright or purplish in hue, and not elevated above the surrounding skin.

Angioma simplex usually yields very satisfactory results to treatment. Several methods are at our disposal. Inasmuch as the mere starting of the process of coagulation in the dilated vessels is sometimes sufficient to cause it to spread throughout the entire growth, the simplest possible measures should be tried before resorting to those which give rise to pain.

In very young infants—and we are consulted very frequently for the cure of nævi in this class of patients—simple pressure should be the first remedy to be tried. This may be carried out by repeated applications of Collodion, which may be repeated two or three times daily for about a month.

Should the physician feel that this plan is inadmissible by reason of the size of the tumor, he may resort to multiple punctures with a fine needle, either as the sole treatment or followed by the application of the Collodion as above. This little operation should be performed under full antiseptic precautions. The punctures are made over the entire growth at intervals of from one-eighth to one-quarter of an inch. The combination of puncture and pressure results in an inflammation with the formation of a plastic exudate, and thus the dilated vessels are obliterated.

Still another method of treatment applicable to small children is multiple puncture with a fine needle (necessarily of platinum) which has been dipped in Nitric acid.

For the majority of cases, electrolysis will be found to be the most certain remedy. The method by which it is to be carried out must be varied by the size and shape of the growth and the age of the patient. The principal objection to this method of treatment is the pain it causes, making it necessary at times to anæsthetize our infantile patients. In the case of adults, this objection is not sufficiently important to carry any weight.

The needles used should be of irido-platinum. Most authorities favor their attachment to the negative pole of the battery; but there is sufficient in favor of a contrary practice that we may recommend the insertion of two needles, each attached to different poles. As is well known, the positive electrode causes a formation of a firmer clot than does the negative. Inasmuch as it liberates oxygen in the electrolytic process, it is necessary that the needle be of irido-platinum when the positive pole is active. The active needle or needles are inserted at more or less of an acute angle through the entire thickness of the growth, a current of three to four milliamperes is turned on gradually and permitted to act for two or three minutes. The degree of blanching of the tissues will be a very good guide as to strength and duration of the applications. After two or three punctures, the patient may be dismissed for a couple of weeks, and the effect of the treatment noted. If, however, a general anæsthetic has been used, it is advisable to do as much as possible at the one sitting. Then we should go over a large portion of the growth, making our punctures about one-quarter of an inch apart and the electrolysis of short duration (about one minute).

Port-wine marks do not yield to treatment as satisfactorily as the simple nævi. Nevertheless, most of them are improved to a great extent, and in nearly all instances the scars following the treatment are less unsightly than the original bright or bluish-red patch. The treatment which should be tried whenever possible is electrolysis, but unfortunately these cases are in a decided minority. In applying it we should endeavor to destroy as much as possible of the enlarged arteries supplying the vascular

area. Some cases may be treated by the application of Chloride of Zinc paste or Chloride of Zinc injections, or the Galvano-cautery. General practitioners, however, will do wisely if they let these methods of treatment alone and refer the patient to the specialist.

An authority whose name I cannot recall, has suggested that the congested area be frozen by application of liquid air, and has claimed good results.

Telangiectasis.

The best method of treating this variety of vascular tumor is electrolysis. The irido-platinum needle attached to the negative pole is passed into the lumen of one of the enlarged vessels, at as near its base as possible, and a current of three or four milliamperes passed for fifteen to thirty seconds. One vessel after another may be obliterated by this method. If done carefully, there should be no scar worthy of the name.

Angioma Serpiginosum.

This is a very rare condition. Electrolysis is practically the only method of treatment capable of destroying the spreading bloodvessels. Excision is impracticable, because it will leave too large a scar.

Lymphangiectodes.

The treatment of this is unsatisfactory, as the growths usually recur. Excision and electrolysis are practically the only methods of treatment permissible. Electrolysis carefully carried out will probably give the best results. A combination treatment may be tried in some cases, *i. e.*, the growth may first be excised, after which electrolysis should be tried as soon as recurrence is noted.

Epithelioma.

Operative measures constitute the only rational treatment. The earlier the removal and the more thoroughly the operation is performed, the more certain will be the good result. Under no circumstances should physicians advise temporizing measures, as X-ray, the application of pastes, etc. While these remedies are valuable in their place, they should be reserved for inoperable cases only. Patients should not be encouraged to procrastination by the administration of internal medicines.

Adenoma Sebaceum.

This is a tumor of the sebaceous glands of congenital origin, but making its appearance shortly after birth. The only treatment is excision or electrolysis, preferably the former.

Malignant Growths.

Malignant growths, as carcinoma and sarcoma, should be treated by thorough excision as soon as the nature of the tumors is suspected. No temporizing measures, as the X-rays, Coley's fluid, or palliative treatment should be countenanced. The surgeon should be consulted at once.

Paget's Disease of the Nipples.

As this lesion is in great danger of taking on malignant changes the only treatment is excision. Caustic applications are to be condemned.

Rodent Ulcer.

The treatment of rodent ulcer should be carried out by the surgeon. It includes excision, applications of caustics, the galvano-cautery, or erosion, according to indications. The X-rays are useful in many cases. It is better, however, to operate the case first and apply the rays afterwards.

Mycosis Fungoides.

This is a chronic malignant disease, characterized usually by precursory symptoms of months' or years' duration, of an eczematous, urticarial, or erysipelatosus aspect, with the subsequent appearance of pinkish or reddish, tubercular, nodular, lobulated or furrowed tumors or flat infiltrations, which frequently ulcerate and form fungoid or mushroom-like growths (Stellwag).

The treatment has proved very unsatisfactory. One case is believed to have recovered following an attack of erysipelas. Another is alleged to have been cured by the hypodermic use of Arsenic. Some strong claims have been made for X-rays. In the majority of cases, however, the best that we can do is to make regular antiseptic dressings, after thorough cleansing of parts, and administer medicines according to symptomatic indications.

Yaws.

(*Frambæsia*.)

Yaws or *Frambæsia tropica* is a highly contagious and infectious tropical disease, running a chronic course, and characterized by the formation of cutaneous raspberry-like papules.

The prophylaxis of the disease is based upon our knowledge of its etiology. Cleanliness as to person and clothing is of the highest importance. It is known that the disease is transmitted through open wounds, scratches, insect bites, etc., and the contagium has been transmitted through clothing, mats, infected dwellings, etc.

Vaccination exerts a remarkable modifying influence on the course of yaws.

The treatment demands that the patients be kept scrupulously clean. Their personal habits must be supervised closely to avoid infection of the healthy.

So far as yet known, *Potassium iodide* has more influence on the disease than any other remedy, although Mercury has likewise been recommended. Arsenic is unquestionably of value in anæmic cases.

The local treatment is conducted on general principles. Antiseptic applications, as Carbolic acid and Mercuric chloride lotions to the lesions, are of value.

Large excrescences should be excised or curetted.

Ulcerations are very resistant to treatment, and should be managed on strictly surgical principles in addition to the constitutional treatment.

Verruga Peruviana.

(*Peruvian warts.*)

This is an infectious disease more or less prevalent in the Peruvian Andes, and characterized by such constitutional symptoms as fever and anæmia, and later by the formation of numerous wart-like tumors.

The disease is known to be infectious or inoculable, and that is about all we can say respecting its positive etiology. Acclimatization confers a relative immunity.

Patients should be removed from the infected district. The local treatment is identical with that of yaws. Constitutionally, we apply remedies on symptomatic principles.

Oriental Sore.

This is a chronic disease of tropical countries, characterized by the formation of a nodule, which undergoes necrosis and forms an ulcer, which later takes on cicatrization.

The lesion is auto-inoculable, hence the patient should take great care of the discharges from the ulcerations, as they are very liable to produce secondary lesions in other portions of the body. There are also very good reasons for believing that the disease is transmissible by immediate hosts, as flies and mosquitoes. So far as is known, the virus of the disease is introduced by wounds of the integument only.

Prophylaxis demands the most scrupulous attention to cleanliness of the skin, especially if abrasions of the same are present.

The treatment includes cauterization of the primary lesion and curettement. Many believe that simple antiseptic dressings of the ulcerations are all-sufficient. These ulcerations heal well under scabs; hence, when the latter form, they should be let alone.

Granuloma Inguinale Tropicum.

The etiology and pathology of this disease are unknown. The suggestion that it is of venereal origin does not seem to have been substantiated. The treatment is very satisfactory, in that thorough curettement and swabbing of the base of the ulcer with pure Carbolic acid usually effects a permanent cure.

It is found in British Guiana and the West Indies, and almost exclusively among the colored race.

Acanthoma.

This is a horny-like wart or papule developing on the skin. The application of Iodoform or of Salicylic acid in the strength of ten to twenty grains to the ounce is the best method of treatment.

Granuloma Pyogenicum.

This is a granulation tumor due to pus cocci. The best treatment is stimulation or curettement or mild cauterization, followed by antiseptic dressings.

Granuloma Annulare.

This should be treated by ointments of Carbolic or Salicylic acid in the strength of ten to twenty grains to the ounce. White precipitate ointment (grs. xl to the ℥j.) is also useful. It may also be treated by the application of the mercurial plaster.

DISEASES OF THE SEBACEOUS GLANDS.***Seborrhœa.**

Seborrhœa is a disease invading the sebaceous glands, characterized by an abundant secretion of fatty material, which appears on the skin as greasy flakes and scales. The treatment is both constitutional and local. In all cases in which the general condition of the patient seems to be impaired in any way, proper constitutional treatment must be instituted. Among old-school dermatologists this is accomplished by the administration of Cod liver oil, Strychnia, Iron, and the tonics generally. The general conditions which especially demand attention are anæmia, derangement of the digestive functions, and constipation.

As regards local treatment, the most important item is the maintenance of cleanliness of the involved area. This is best accomplished by frequent bathing and washing of the parts affected. In mild cases any ordinary good soap will be efficient, but if there is a sluggish, unhealthy condition

* By Dr. Deming.

of the skin, a soap which is more active will be required ; it is then that we should use the Tincture of green soap.

The washings should be repeated frequently enough to control secretion and prevent undue accumulation of the fatty matter. If the lesions are on the non-hairy parts of the body, such as the face, washing once daily is sufficient. This should be done by preference at night. Tepid water with soap should first be used. After a few minutes the temperature of the water should be increased until it is as hot as the patient can bear with comfort ; and then it should be changed suddenly to absolutely cold water. This stimulates the action of the skin.

When the disease involves the scalp it is not necessary to wash oftener than every two or four days.

All local applications should be applied immediately after the wash.

When treating infants, it is wise to be very mild in one's local treatment, as an infant's skin is delicate and prone to react very quickly, and even to an excessive degree from the application of very mild irritants. This observation is of course important in all cases, though not in adults to the extent it is in infancy.

If irritation develops at any time, the active measures of treatment should be discontinued immediately. Local treatment should be kept in entire abeyance until the reaction subsides.

Infants frequently develop seborrhœa on the scalp, the so-called **crusta lactea**. The accumulation of fatty matter on the scalp should never be removed by forcible mechanical means, as scraping off with a comb, as is done by many inefficient and officious nurses. Such a course is a common factor in the early development of eczema. Instead, the crusts should be softened with a non-irritating unguent, as Olive oil, to which Salicylic acid may be added in the proportion of five grains to the ounce. This soon loosens the crust so that it can be wiped off with gentle manipulations with a piece of absorbent cotton.

The remedies that we use externally for seborrhœa are *Sulphur*, *Salicylic acid*, *Resorcin*, *Boric acid*, *Ammoniated mercury*, and *Betanaphthol*.

Resorcin is the general favorite. For the scalp it is best used in the form of lotion. The formula for the same is as follows :

Resorcin,	℥ss to ʒi.
Alcohol,	℥vj.
Aquæ destillat.,	℥iij.

If the Resorcin is used as an ointment, it should be in the strength of fifteen to thirty grains to the ounce of Vaseline.

In women especially the lotion will be preferable, as it will save the apparent necessity of smearing the scalp with grease. In some cases, how-

ever, it is better to use the ointment, because the latter remains longer on the affected area and its action is, therefore, more continued. It is of the highest importance that patients be given explicit directions as to how to use the salve and thus avoid smearing the head. The head or scalp is to be divided into four imaginary areas or quadrants by lines fore and aft and from side to side. A minute quantity of the ointment should be rubbed into the hairs covering one quadrant each night until all four have been thus treated. At the end of this time, the scalp should be washed carefully and the treatment renewed as before.

One objection to the use of Resorcin on the scalp, especially in the case of people with white or gray hair, and sometimes those with brown hair, is the tendency of the drug to stain the hair a dirty yellowish color. This is especially liable to happen if the ointment is too strong.

Sulphur is another very valuable remedy, and to my mind it is especially so when applied in combination with *Salicylic acid*. The formula is the following :

Salicylic acid,	.	.	.	.	.	.	.	.	.	grs. v-xx.
Sulphur præcipitat.,	.	.	.	.	.	.	.	.	.	ʒss-ʒj.
Vaselin,	.	.	.	.	.	.	.	.	.	ʒj.

A formula for using Sulphur in combination with *Zinc oxide* is the following :

Sulphur præcipitat.,	.	.	.	.	.	.	.	.	.	ʒj.
Zinc oxid.,	.	.	.	.	.	.	.	.	.	gr. xxx.
Vaselin,	.	.	.	.	.	.	.	.	.	ʒj.

Beta-naphthol is best used as a salve with *Sapo viridis* in 1 to 5 per cent. strength.

Boric acid is not a very active therapeutic agent, but is applicable to a certain number of cases. It is best employed in the form of lotions in full strength.

Internal Medication.—*Arsenicum album* is indicated in patients presenting the characteristic general features of Arsenicum, associated with dry, scaly condition of the scalp ; the scalp is covered with branny scales ; hair falls off easily, especially in patches, or becomes rough and dry.

Bryonia.—The scalp is greasy and is covered more or less with coarse scales, which may be heaped up in places and resemble crusts. The hair and scalp are markedly sore and tender to the touch ; pain is caused even by gentle attempts at combing the hair ; it is especially adapted to hot weather illnesses ; the patient is worse from walking and perspiration.

Graphites is characterized by a lesion which is a yellowish crust and greasy in appearance, and is usually associated with more or less moisture. The characteristic location for this lesion is back of the ears.

Sepia.—The skin is especially sensitive to cold. The lesions are usually dark-red in color, and are associated with scaliness. Characteristically it makes its appearance on and across the nose (the so-called butterfly).

Chelidonium.—In severe cases, when the lesions are situated on the face, scrotum or the anus, and assume the erythematous type. The patient is somewhat phlegmatic or a sallow-complexioned individual. There are burning, biting, and stinging pains in the affected area. Chelidonium is especially suited to severe cases which are very resistant to treatment.

Kreosotum.—The condition is usually worse at night, and from scratching; better from cold or being in the open air. The characteristic lesions are fatty crusts. They are very persistent and are associated with burning and itching. The site of the lesion is usually on the face or back.

Mercurius vivus.—The eruption usually involves persons of an anæmic appearance. Burning and itching are prominent symptoms; worse at night. The lesions are small and sharply circumscribed reddish macules on the inner surface of the arms, thighs, and abdomen.

Mezereum.—The eruption involves the scalp, which is covered with crusts of a chalky or flake-like appearance. The hair is brittle and dry. On the whole, the condition is worse from warmth, and especially at night.

Sulphur.—Worse from warmth; lesions are circumscribed, and present a dirty reddish appearance, and associated with marked scaliness. The sebaceous glands seem blocked up with the products of their secretion, and are inflamed, which changes are very apparent to the eye.

Sebaceous Cysts.

(*Wens*.)

The treatment is enucleation by surgical intervention.

Milium.

By milium is meant a white tumor containing sebaceous material. When the condition occurs in young children, frequent bathing with a mild ordinary soap application will be all-sufficient. In those of more severe type, it may be necessary to use the Tincture of green soap even to the point of causing an exfoliation of the skin. In adults, the lesions should be opened with a small sharp-pointed knife, the contents expressed with a comedo expressor, and the sac destroyed by the application on the end of a pointed stick of a Carbolic acid solution (gr. xl-5j). This should be followed immediately by the application of alcohol in the same way to keep the Carbolic acid from overacting.

Electrolysis, as will be described in a future section on the treatment of Nodosities, is a successful method of treating milium.

If the condition is very extensive or very aggravated we may use

Lassar's peeling paste. This should always be used with the greatest caution, as when used by a careless person it is capable of doing much damage. The formula for this paste is as follows :

Beta-naphthol,	. . . . .	10.0
Sulphur præcipitat.,	. . . . .	50.0
Vaselín,		
Sapo. viridis,	. . . . .	āā 20.0

Each day a small quantity of this paste is spread over the affected place, and left there for about one hour. Then it becomes dry and should be removed. This is to be repeated daily for two to four times. At the end of this time, a mild dermatitis has been excited with an exfoliation over the affected area. The milium is then thrown off. The patient must be carefully watched, lest we produce an extreme dermatitis. When applying this treatment the patient's susceptibility and everything must be taken into consideration. Usually, during a course with this paste, we should avoid the use of water on the face, as after awhile we may excite an eczema. On the other hand, the face should be carefully powdered. If one course of the treatment is not sufficient it may be repeated. This treatment is not to be recommended to the general practitioner, as it is apt to lead to disastrous results.

Comedo.

Comedo is a blocking up of the gland ducts by normal sebaceous material, epithelial cells, dirt, etc., which form little black points and papules. The treatment of this condition should be more or less general. The patient must be built up and his general health looked after. Hyper-nutritious diet, which is at the same time easily digested and assimilated, must be prescribed. Many of these cases suffer from gastro-intestinal disturbance and constipation, which must be corrected. Occupation and environment often play an important part in its etiology, especially in persons whose occupation compels them to work in an atmosphere containing a great amount of dust or soot. Frequent bathing of the face in hot water and soap, massage, and steaming of the face are useful. Electrolysis seems to be useful in a few instances. The remainder of the details of the treatment are identical with those required in acne vulgaris, which will next be described.

Acne Vulgaris.

Acne vulgaris is a disease making its appearance in young adult life, and is the result of the irritant secretion of the sebaceous glands associated with inflammation.

The treatment of this condition is both constitutional and local. The case must be studied carefully to discover any morbid condition, to which therapeutic efforts must be directed. The usual rule is to discover anæmia,

gastro-intestinal disturbance, constipation, menstrual irregularities in girls, and masturbation in boys. Improper methods of eating must be corrected. Youth is too prone to swallow meals with insufficient mastication, or indulge in pastry and other contraband articles of diet. Alcohol and highly-seasoned foods must be prohibited *in toto*. Meals must be taken at regular intervals.

Local Treatment.—An essential item in the treatment of acne is cleanliness, maintained by frequent bathing with warm water and soap, and when the skin is sluggish, the Tincture of green soap is applicable. It is also a good plan to follow the cleansing of the face by the use of hot water, and then changing suddenly to ice-cold water. Occasionally steaming the face and massage are of benefit. The large pustular lesions should be opened with a fine-pointed knife constructed expressly for this purpose. The incision should be thorough, as there is no danger of scarring. The contents of the pustules should be expressed with a comedo expressor. Under no circumstances should we sanction the opening of the pustules with a needle and squeezing the contents out with the fingers. This course is pretty certain to injure the surrounding skin, and promotes the development of new lesions by blocking up the glandular ducts. Some of the large deep-seated lesions are multilocular and will have to be opened more than once. They may also require local application of Carbolic acid solution in the proportion of forty grains to the ounce. In other words, they should be treated as a minute abscess.

Another method which I have employed with satisfaction in the treatment of the multilocular abscesses is the obstructive hyperæmia method of Bier. A specially constructed cup with an exhaust pump or bulb is used. Each lesion is carefully treated by suction.

Acne vulgaris is not an innocent disease, notwithstanding the opinion of many physicians and laymen to the contrary. Unfortunately, we find many of these cases run a course of years before recovery ensues, and then not until the skin has been damaged irreparably and disfiguring scars have formed. In still others, the lesions are replaced by stains, which are prone to become prominent under sudden changes of temperature. It is, therefore, a good rule to insist upon the early and thorough treatment of acne.

Acne vulgaris which has associated with it a mild degree of seborrhœa oleosa may be treated successfully by local applications containing Sulphur in combination with Salicylic acid. A good formula is the following :

Salicylic acid,	gr. v-x.
Sulphur præcipitat.,	ʒss-ʒj.
Vaselin,	ʒj.

This, like all ointments used in the treatment of acne, should be applied immediately after thorough cleansing of the surface, and at night, allowing it

to remain on the skin until morning, when it should be removed by bathing, followed by applications of hot water. After drying, the surface should be powdered.

The following is the formula of a lotion :

Sulphur præcip.,	
Glycerin,	
Spiritus vini rect.,	āā gr. lxxv.
Acetis glacialis,	gr. xv.

This should be applied carefully over the affected area, and at night. In the morning it should be washed off with soap and warm water, followed by the application of a dusting powder of starch.

In certain cases in which the lesions are very pronounced, and ordinary measures fail, one application of the Lassar peeling paste is occasionally of use.

Acne Rosacea.

Acne rosacea is a dilatation of the bloodvessels of the skin of the face, involving particularly the parts about the nose, cheeks, and chin, and the result of long-continued congestion and inflammation.

The constitutional treatment is identical with that already given for the other varieties of acne. Indulgence in alcoholics must be forbidden positively, as they tend to promote congestion. This statement is made in full understanding of the fact that acne rosacea is a possible condition in total abstainers.

A number of authorities have advocated the use of Ichthyol internally in doses of five minims three times daily. It should be administered in the form of either pill or capsule. It must be administered with caution, as it is capable of causing gastro-enteric disturbance in some persons.

When, as is the rule, there are pustules and papules associated with the vascular dilatation, these lesions should be treated as already described under the heading of acne vulgaris. Especially should the use of bathing the parts in hot and cold water alternately not be neglected.

Locally, many cases seems to respond best to some application of Ichthyol. The following is an excellent formula :

Ichthyol,	grs. xv-ss.
Resorcin,	grs. xv-xxx.
Adipis lani,	ʒvj.
Olli olivæ,	ʒijss.
Aq. destillat.,	ad ʒjss.

Another good application is Lotio alba, which consists of the following :

Zinc sulph.,	
Potassium sulphurett,	āā gr. xv-xxx.
Aq. destillata,	fʒj.

The majority of cases, however, refuse to respond to the above-mentioned ointments and demand more active measures before we can secure a radical cure. In cases where there are many large superficial dilated bloodvessels the latter must be destroyed. The measures to be instituted for this purpose include electrolysis, multiple scarification, and Lassar's method.

Of these, the best for the majority of cases is electrolysis. A minute irido-platinum needle which is attached to the negative pole of the galvanic battery is inserted into a dilated vessel and passed along its lumen. A current of two or three milliamperes is permitted to pass for a few minutes. Whenever possible, the base of the bloodvessel, or that part which is the largest or supplies the greatest number of small vessels, should be chosen for treatment. The operation should be repeated on one vessel after another at succeeding seances until all are destroyed. Care must be observed to treat bloodvessels close to each other at one sitting, lest we produce unnecessary scarring.

Multiple scarification is self-explanatory.

Lassar's treatment is carried out by a specially devised instrument. It is really a mechanically ingenious modification of the treatment by scarification. The instrument consists of a circular disc in which a number of fine needles of exactly the same length are inserted. By electric or mechanical power the disc executes very rapid punching movements of small amplitude. The surface treated by it is thus filled with countless minute perforations. Lassar's procedure, while effective, is unnecessarily bloody, and should not be employed until other less heroic measures have failed.

Acne Variolaformis.

This disease is characterized by acne-like papules which, on healing, leave scars resembling those of small-pox.

Many cases will need Arsenic in some form together with Cod liver oil to build up the general condition. I believe that Arsenic in rather large doses will influence a certain number of cases favorably. In very many cases there is a tendency to spontaneous recovery, but unfortunately with the formation of scars.

Usually acne variolaformis is associated with more or less of a seborrhoeic condition, and this should be treated as suggested in the section on Seborrhoea.

For acne variolaformis *per se* we secure the best results from the application of some form of Mercury, especially from the white precipitate ointment of 10 per cent. strength.

A salve which has been recommended by Sabouraud is the following :

Resorcin,	
Acid. salicylic,	ss.
Vaseline,	3i.

Remedies.—Lilienthal presents the following repertory of acne :

Acne Disseminata (Pimples on the face of young people).—*Arsenicum*, *Arsenicum brom.*, *Arsenicum iod.*, *Belladonna*, *Calcarea carb.*, *Carbo veg.*, *Causticum*, *Hepar*, *Eugenia*, *Lachesis*, *Ledum*, *Kali mur.*, *Natrum mur.*, *Natrum brom.*, *Nitric acid*, *Nux vom.*, *Nux juglans*, *Phosphoric acid*, *Pulsatilla*, *Sabina*, *Selenium*, *Sulphur*, and *Sulphur iod.*

Acne Indurata (Indurated pimples).—*Antimonium sulphuratum auratum*, *Arsenicum*, *Belladonna*, *Berberis*, *Carbo veg.*, *Conium*, *Hepar*, *Kali bromatum*, *Kali hydriodicum*, *Ledum*, *Nux vomica*, *Pulsatilla*, *Silicea*, *Sulphur*, and *Sulphur iod.*

Acne Miliaris (Pimples of young chlorotic girls).—*Arsenicum bromatum*, *Asterias*, *Baryta carb.*, *Calcarea*, *Graphites*, *Hepar*, *Kali carb.*, *Natrum mur.*, *Sabina*, *Selenium*, *Sulphur*, and *Thuja*.

Acne Punctata (Black pores).—*Aurum*, *Belladonna*, *Bryonia*, *Calcarea carb.*, *Carbo veg.*, *Digitalis*, *Drosera*, *Eugenia*, *Graphites*, *Gratiola*, *Hepar*, *Hydrastis*, *Natrum mur.*, *Nitric acid*, *Nux juglans*, *Sabadilla*, *Sabina*, *Selenium*, *Sepia*, *Sulphur*, and *Thuja*.

Acne Rosacea (Coppery red eruption of the face).—*Arsenicum*, *Aurum muriaticum*, *Calcarea carb.*, *Calcarea phos.*, *Cannabis sativa*, *Cantharis*, *Carbo animalis*, *Carbo veg.*, *Carbolic acid*, *Causticum*, *Cicuta*, *Clematis*, *Hydrocyanic acid*, *Kali bromatum*, *Kreosotum*, *Lachesis*, *Ledum*, *Mezereum*, *Nux juglans*, *Petroleum*, *Plumbum*, *Rhus tox.*, *Ruta*, *Sepia*, *Silicea*, *Sulphur*, *Sulphuric acid*, *Veratrum*, and *Viola tricolor*.

Acne Vermiformis (Comedones).—*Selenium*, *Sulphuric acid*, *Graphites*, *Natrum*, *Nitric acid*, *Bryonia*, *Calcarea*, *Dioscorea*, *Drosera*, *Natrum mur.*, *Sabina*, *Aurum*, *Cubeb.*, *Digitalis*, *Eugenia*, *Plumbum*, and *Sabadilla*.

Acne of Drunkards.—*Antimonium crudum*, *Baryta carb.*, *Kreosote*, *Ledum*, *Sulphur*, *Arsenicum*, *Lachesis*, and *Pulsatilla*.

Acne Arising from Sexual Abuse.—*Calcarea*, *Eugenia*, *Kali bromatum*, *Phosphoric acid*, and *Sulphur*.

Special indications for several of these remedies are as follows :

Antimonium crudum.—Acne indurata when the main lesions are associated with small red papules, which sting on pressure ; cases dependent upon gastro-enteric disorder and alcoholism.

Antimonium tartaricum.—The lesions present pustulation with deep red areola, which leave cicatrices. If any sensations are present they are of a tickling, crawling, and burning character. The patient has a desire for acids and alcoholic stimulants.

Arsenicum album.—The skin exhibits great intolerance of local stimulating applications. Morbid sensations are limited to those of a burning character ; aggravation at night and from scratching ; relief from warmth. Chronic cases.

Arsenicum bromatum.—Cachectic patients. Lesions of an indolent

character ; appearing especially on hairy parts of the skin. Dearborn, speaking of this remedy, says : "The general symptoms are chiefly those of Arsenic, the local those of Bromine. Papulo-pustular lesions bordered by a deep red areola varying in size and depth, slow in onset, and course 'often blind' and even after rupture slow to resolve, extremely sensitive at the periphery, and sometimes anæsthetic at the centre, with a tendency in persistent cases to form compound lesions and to occasionally ulcerate or pursue a malignant course."

Arsenicum iodatum.—In debilitated or tuberculous subjects ; general asthenia ; emaciation ; papules are hard and shotty with indurated base, pustular at the apices only ; worse from washing or stimulation and leave scars.

Baryta carb.—Tubercular diathesis ; sensations of tension in or about the lesions ; relief from local stimulation ; aggravation from alcohol.

Belladonna.—Acne in plethoric subjects ; patient subject to flushing of the face ; papules of a bright red color, the skin between being of a lighter red ; fine, stinging pains ; tenderness to touch.

Crotalus.—The lesions are surrounded by purplish areolæ ; the circulation is weak or sluggish. Hysterical subjects with menstrual disturbances.

Graphites.—Dry and sensitive skin ; lesions readily take on septic infection and become suppurative. Stout women with delayed menstruation.

Kali bromatum.—Papules ; tubercles ; pustules ; comedones. Pustules are yellowish white, leaving nodules or pigmentations or scars ; skin greasy.

Nitric acid.—Facial papules, worse on or near the hair line ; pigmentary areolæ ; indurated pustules on chin, neck and shoulders ; sticking pains, which disappear when suppuration takes place.

Nux vomica.—Indications are mainly etiologic, including dyspepsia and constipation and abuse of purgatives ; in cases associated with headache and insomnia.

Selenium.—Inflammation in and about the pustules continues after their discharge, and are associated with seborrhœa oleosa and comedo.

Sepia.—The lesions present brownish areola ; especially in young women ; during pregnancy and the period after nursing.

Silicea.—Scrofulous or rachitic subjects ; aggravation in cold weather ; better in warm weather ; patients in a state of general malnutrition.

Sulphur.—"In thin irritable subjects with dilated veins or capillaries ; with harsh rough skin ; worse from alcoholic stimulants ; disagreeable odor from skin, but disinclination to bathe ; in chronic cases, rebellious to treatment." (Dearborn.)

* By Dr. Deming.

Hyperidrosis of the axillæ may oftentimes be greatly relieved if not actually cured by the application of a sponge wrung out in hot water twice daily.

Boric acid solutions are also excellent.

Hyperidrosis of the feet is best treated by frequent bathing of the feet, and the wearing of *clean* stockings. To secure the latter item, it is necessary that stockings should be boiled in Boric acid solution and then washed. It is also very good practice to dust finely powdered Boric acid into the shoes and stockings. Care must be taken not to be too energetic in the treatment of hyperidrosis in any locality, lest we provoke a secondary eczema.

The remedies for hyperidrosis are *Carbo veg.*, *Sepia*, *Sulphur*, *Calcare carb.*, *Muriatic acid*, *Petroleum*, *Arnica*, *Plumbum*, *Sabadilla*, *Lycopodium*, and *Drosera*.

Hyperidrosis of the Feet.—*Graphites*, *Petroleum*, *Apis*, *Silicea*, *Sulphur*, *Iodine*, and *Thuja*.

A very complete repertory of conditions of morbid sweating will be found in Lilienthal's *Therapeutics*, p. 1006, *et seq.*

Bromidrosis.

Bromidrosis is to be treated in exactly the same way as hyperidrosis. Formalin lotions of 3 per cent. strength constitute the best local application.

The indicated remedies are usually *Baryta carb.*, *Silicea*, *Plumbum*, and *Silicea*.

Chromidrosis.

This is nearly always due to some constitutional defect. We should direct our treatment against the anæmia, hysteria, and uterine disorders. Locally, we may use *Boric acid*, and in cases dependent upon micro-organisms, *Resorcin*.

The internal remedies are *Arsenicum*, *Carbo animalis*, *Graphites*, and *Mercurius*.

Anidrosis.

Anidrosis is nearly always secondary to other diseases, as chronic nephritis, diabetes mellitus, and certain skin diseases, notably ichthyosis.

The treatment is that of the primary disorder, the correction of excessive watery elimination by the kidneys, stimulation of the skin by the Turkish bath and vapor baths, or by cold sponge bathing.

The remedies are *Apis mellifica*, *Kali carb.*, *Natrum carb.*, *Nitric acid*, *Rhus tox.*, *Sepia*, and *Zincum metallicum*.

(Prickly heat.)

Feebly alkaline or bran baths are useful.

As a lotion, we can recommend :

[illegible]

Or, as dusting powder,

[illegible]

Sudamina.

Hydrocystoma.

DISEASES OF THE HAIR AND HAIR FOLLICLES.*

Leptothrix.

This is a somewhat common affection which usually escapes the patient's attention. It consists of concretions or nodular growths along the shafts of the hairs in sweaty regions, but especially about the genitals and the axillæ. It is believed to be due to the formation of zoögliæ masses upon the hairs. It is very resistant to treatment. The affected parts should first be shaved. Following this, the treatment includes frequent and thorough washing with soap and water and the application of Mercuric chloride solution in the proportion of eight grains to four ounces of diluted alcohol.

* By Dr. Deming.

Tinea Nodosa.

This is a rare disease due to a fungus growth on the hairs of the whiskers and moustache. The treatment is clipping or shaving of the hair on the affected parts and the application of a mild parasitic ointment or lotion, *e. g.*, as saturated *Boric acid solution*.

Trichorrhexis Nodosa.

Trichorrhexis nodosa is sometimes, though incorrectly, spoken of as tinea nodosa. It is a rare condition characterized by the formation of small nodes on the shafts of the hairs, observed especially about the beard and the scalp. Careful examination shows that these nodes are due to a splitting asunder of the fibres of the hair shaft. The condition has not inaptly been compared to the jamming of two small brushes together end to end. The hair is usually brittle. The subjects of the disease are almost invariably in most excellent health.

Basing our treatment on the parasitic theory, which is the one most commonly entertained by dermatologists, the disease should be treated by shaving and the application of saturated watery solution of *Boric acid*. To this we may add in some cases one grain of *Mercuric chloride* to the ounce. One per cent. *Pyrogallol ointment* has also been recommended.

Proceeding on the tropho-neurotic theory, which is believed to be almost untenable, our treatment should be directed entirely to the building up of the general health by reconstructive (tissue?) remedies, and the avoidance of nerve wear and tear, and out-of-door life.

The prognosis is very unfavorable.

Monolithrix.

(*Beaded hair ; moniliform hair.*)

The above-mentioned synonyms are definitive of this condition. The nodes or beads are not due to a bursting of the hair shaft as in the preceding. Unlike trichorrhexis, also, the tendency to break is in the thin portions of the hair, and not in the nodes. It occurs mostly on the scalp, and is often associated with keratosis pilaris. It is observed almost exclusively in infancy, and is believed to be due to a congenital error of development.

The treatment is practically negative as to results. When associated with a hyperkeratosis, the therapeutic measures already recommended for the latter should be instituted. Eventually, the lesions lead to baldness over the affected area.

In the acquired cases, the most satisfactory treatment has been local stimulation of the scalp by the faradic brush.

Fragilitis Crinium.*(Split hairs.)*

The splitting usually takes place at the end of very long hair, as in men wear long beards and in the scalp of women. An explanation offered at the great length of the affected hair makes its peripheral nutrition defect. In such cases, the treatment consists of clipping off the ends of hairs, but a few being cut with each closure of the scissors. Singeing of ends of the hairs is regarded as more efficient than clipping. This work must be done carefully by an experienced operator.

The above-mentioned explanation does not account for all cases, for sometimes we observe the splitting to start at the base of the hair.

Some cases are associated with a pustular folliculitis, but the relationship of cause and effect has not been established.

Canities.*(Gray hair.)*

The prognosis is unfavorable excepting in some instances in which the grayness of the hair has followed an acute and exhausting illness. The treatment in the latter case is obviously the administration of restorative remedies for building up the general health, and the enforcement of the rules of good general hygiene, especially as relates to plenty of nourishment and fresh air.

In some few cases, the administration of *Pilocarpine muriate* in doses of one-tenth of a grain three times daily has relieved the condition. In incurable cases the gray hair may be dyed, if the patient is sensitive and worries over the defect. At the same time he should be warned that many of the hair stains are toxic in their effects or are capable of setting up a dermatitis.

Faradization of the scalp with the wire brush has also been recommended.

Hirsuties.**(Superfluous hair.)*

The most satisfactory treatment for superfluous hair is electrolysis, an operation that requires good vision, a steady hand, and a little patience. It is a procedure that any general practitioner can learn and become skillful. If he is at all fearful of his proficiency, he may practice on exposed portions of his own skin until he has acquired the necessary technique.

The apparatus required include a good galvanic battery of at least ten cells, the chloride of silver batteries being the best for the general medical man, though he may fit himself up with ten of the ordinary dry cells now on sale in all automobile supply houses.

* By Dr. Bartlett.

A fine needle for entering the hair follicle, and a light pencil-shaped handle for holding the same. This handle must not have an interrupting switch.

A plain flat sponge electrode.

A pair of cilia forceps.

A pair of cords.

Any fine needle will do. At the same time, dermatologists now prefer the irido-platinum needles which are manufactured for this special purpose, because their flexibility permits them to follow the course of the hair follicle, just as the soft rubber catheter follows the line of the urethra.

It is not necessary to anæsthetize the parts. It is true that the electrolysis is somewhat painful at the first few sittings, but the patient soon learns to ignore it, especially if the physician is not too energetic in his early treatments. The parts that are the most sensitive are usually over the upper lip and near the median line. Hence, in nervous patients, this place had better be let alone until the patient is better acquainted with the operator.

The patient should be placed in a good light and sitting in a chair. The operator may occupy the position most convenient for himself, though the majority will find that behind the patient with her head resting against the left upper arm will be the most satisfactory. The patient holds the large sponge electrode well moistened in warm water by the handle and in her right hand. The operator holds the cilia forceps in his left hand, while in the right he holds the needle and its handle in the pen position, his grasp should be the lightest possible, so that no force whatever is required in placing the needle within the follicle. Indeed, after the point has entered the orifice he may let the handle rest upon one finger, and by the slightest movement towards the patient the needle goes to the bottom of the follicle. The insertion of the needle requires no exertion and causes no sticking *pain*. The needle is attached to the negative pole of the battery.

If the physician has a milliamperemeter, he should regulate the strength of the current to measure two to four milliamperes.

The needle in position, the patient is now instructed to apply the wet sponge surface of the positive electrode to any indifferent point of her own body, say the back of the left hand. This completes the current. Immediately the operator observes a delicate bubbling about the orifice of the hair follicle. In the course of from ten to thirty seconds he may remove the needle, and make traction on the hair thus treated. If the electrolysis has been successful the hair can be lifted out of its bed without the slightest traction. Some operators prefer to make gentle traction on the hair while the electrolytic process is going on. They then know by the loosening of the hair when the destruction of the hair root is complete.

The circuit should always be made and broken by the patient herself

with the indifferent flat electrode. If this is done with a switch or is completed and broken by the physician in introducing and withdrawing the needle unnecessary pain is occasioned.

Hair follicle after follicle should be treated in the above manner until the superfluous hair is removed. The operator should always endeavor to remove hairs at some distance from each other at the one seance. It is unwise to remove a large number lying close to each other, as that would produce unnecessary irritation, and even scarring.

About twenty to thirty hairs may be removed at a seance. Few patients care to submit to the discomfort for a longer time than this requires.

If any undue inflammation or irritation follows the treatment it may be subdued by applications of hot water.

Cases presenting a rich growth of soft downy hairs are not suited to electrolysis.

After complete removal of the superfluous growth, about 10 per cent. to 20 per cent. of the hairs will return by reason of not having been destroyed in the first place. There will also be a certain number appear as new growths, or maturing of hairs which had not seemed sufficiently large to remove. The claim made by some dermatologists that the soft downy hairs are stimulated to active growth while a theoretic possibility lacks confirmation.

This objection carries but little weight, as these small hairs develop into large ones sooner or later without any stimulation.

The scarring from the electrolytic destruction of hairs is so slight as to be a negligible quantity in the treatment.

Depilatories.—The removal of superfluous hairs by chemical applications is of temporary value only. One of the best for this purpose is that proposed by Duhring, consisting of two to four drachms of Barium sulphide, and sufficient starch and Zinc Oxide to make up to one ounce. This powder must be kept dry and tightly corked. For use, some of it is made up into a thick paste with water and spread thickly over the hairy parts. It should be permitted to remain for about one minute, when it should be washed off. Its application is followed at once by a burning sensation, and some redness continues for some time.

Shaving is about as efficient as the depilatories; and, like them, is but temporary, and tends to stimulate the hair to increased growth. Nevertheless, there are cases in which the growth of hair is so extensive and of such a peculiar character as to make any other means of removal impossible. With the numerous excellent safety razors on the market there is no reason why the victims of this deformity should subject themselves to the criticism of the social world by permitting the deformity to be in constant evidence.

Alopecia.*(Loss of hair ; baldness.)*

Alopecia is a mere symptom, the treatment of which is best studied by the consideration of its several varieties *seriatim*.

Alopecia Seborrhœica.*Alopecia pityroides.*

Alopecia seborrhœica is a loss of hair which is associated with a seborrhœic condition of the scalp. Many of these cases will respond to the ordinary treatment for seborrhœa, which has been described in a previous section.

Cleanliness is a *sine qua non*. The majority of cases will respond to the following lotions, applied always immediately after cleansing the scalp thoroughly :

Resorcin,	.	.	.	.	.	.	.	.	.	grs. xx.
Alcohol,	.	.	.	.	.	.	.	.	.	℥j.
or,										
Resorcin.,	.	.	.	.	.	.	.	.	.	ʒj.
Acidi acetici,	.	.	.	.	.	.	.	.	.	℥j.
Eau de Cologne,	.	.	.	.	.	.	.	.	.	℥iij.
Aq. rosæ,	.	.	.	.	.	.	.	.	ad	ʒviij.

A very excellent ointment is the following :

Resorcin,										
Sulphur præcipitat.,	.	.	.	.	.	.	.	ââ	grs. xx.	
Vaselin,	.	.	.	.	.	.	.	.	ʒj.	
Lanolin,	.	.	.	.	.	.	.	.	ʒviij.	

Skinner recommends the following as a most excellent antiseptic and stimulant for the scalp :

Ac. salicylic,	.	.	.	.	.	.	.	.	.	grs. x.
Resorcin,	.	.	.	.	.	.	.	.	.	ʒss.
Tinc. canthar.,	.	.	.	.	.	.	.	.	.	℥ss.
Tinc. capsic.,	.	.	.	.	.	.	.	.	.	ʒj.
Saponin,	.	.	.	.	.	.	.	.	.	ʒj.
Lanolin,	.	.	.	.	.	.	.	.	.	ʒj.
Aq. rosæ,	.	.	.	.	.	.	.	.	ad	ʒx.

Alopecia Areata.

Alopecia areata is a loss of hair in spots, which gradually spreads until they may involve the entire scalp. A remarkable feature of this disease is the fact that there is no visible change in the cutaneous covering of the cranium.

The treatment of alopecia areata is stimulation, which should in many cases be carried to the point of marked irritation. In other words, it is often necessary to produce dermatitis to produce good results.

Lassar has recommended a treatment which, while capable of giving good results, demands so much attention that but few persons have the time and inclination to carry it out with the necessary attention to detail. Two hours are required for each treatment. In these days, with many excellent manicures and hair dressers skilled in their work, and the many women who have made their calling a necessary part of the social life, Lassar's treatment is removed of much of its objectionable features, as women will go to any extent to avoid the unsightly deformity of an alopecia areata. The hair and scalp are first washed thoroughly with a tar soap, the lather from which is permitted to remain without disturbing it for ten minutes. Next the parts are carefully cleaned by warm and cold water applied alternately by a shower douche. The hair and scalp are then thoroughly dried by towels. Finally, the hair is dried thoroughly by a hot-air douche, and the following application is used :

Sol. hydrargyr. bichloridi, 1:1,500.
Glycerin,
Eau de Cologne, āā ʒij.

Following this an application of absolute alcohol, to which one-half per cent. of Naphthol has been added, is made.

Following this again, we make the following application :

Salicylic acid, grs. xxx.
Tinc. benzoin, m. xlv.
Ol. bubul., ad fʒij.

Another very good method of treatment is the use of Croton oil in the following salve :

Ol. croton, m. xxx.
Cer. alb.,
Butyri cacao, āā ʒ¼.

A small quantity of this is rubbed into the affected area. In from twelve to twenty-hour hours it is followed by a rather intense dermatitis, which is usually associated with considerable burning. This inflammation is permitted to run its course, which usually takes about a week, when the treatment is repeated.

The use of *Chrysarobin*, which to my mind is even better, should be applied by the physician himself, as carelessness in its application may lead to some of the drug getting into the eyes. It is used in 5 per cent. strength, and is painted on the affected parts about once a week. The great objection to it is that it discolors the parts after the fashion of Iodine tincture.

Lactic acid, ʒvj.
Aq. destillat., fʒij.

This is applied carefully over the affected area. It is followed by a dermatitis, which should be allowed to run its course. Occasionally, it may be necessary to apply a mild, soothing application when the irritation is too severe.

Alopecia Cicatrisata.

This is a loss of hair over circumscribed irregular areas, and is usually associated with destruction of the hair follicles and the formation of cicatrices. The bald spots sometimes coalesce.

The treatment consists of epilation and the application of some form of Mercury, as a solution of Mercuric chloride, 1:2,000, or, better still, *Ammoniated mercury* in the strength of forty grains to the ounce.

Sycosis.

Sycosis is a microbic infection of the hair shafts and follicles, usually involving the region of the beard.

The patient should be advised to shave regularly. When the hairs have loosened they should be pulled out. Shaving acts mechanically by opening the pustules and allowing their contents to escape. When there is marked inflammation, as is usually the case, soothing applications should be used. A good formula is the following :

Carbolic acid,	.	.	.	.	.	.	.	.	grs. v.
Ac. borici,	.	.	.	.	.	.	.	.	grs. xx.
Vaselin,	.	.	.	.	.	.	.	.	℥j.

After the acute inflammatory symptoms have subsided we may resort to more active treatment. A good application at this stage is the following :

Ac. salicylic,	.	.	.	.	.	.	.	.	grs. xv.
Sulphur præcipit,	.	.	.	.	.	.	.	.	℥j.
Vaselin,	.	.	.	.	.	.	.	.	℥jss.

Or we may use the following paste :

Ac. salicylic,	.	.	.	.	.	.	.	.	grs. xv.
Sulphur præcipitat,	.	.	.	.	.	.	.	.	℥j.
Zinc. oxid.,	.	.	.	.	.	.	.	.
Amyli,	.	.	.	.	.	.	.	.	āā ℥ijss.
Vaselin,	.	.	.	.	.	.	.	.	℥j.

It is a good rule to apply this over a small area at first, and note results. If satisfactory, we may persevere in the treatment over the entire area affected.

Another salve which is of value is the following :

Hydrargyri oleinic, 5 per cent.*	.	.	.	.	.	.	.	.
Zinc paste,	.	.	.	.	.	.	.	.	āā ℥j.
Salicylic acid,	.	.	.	.	.	.	.	.
Ichthyol,	.	.	.	.	.	.	.	.	āā grs. xv.

* This may be prepared by mixing the ordinary *Oleate of Mercury* one part with four parts of *Oleic acid*.

This should be applied at night and washed off in the morning, after which the face should be powdered.

I believe that cataphoresis with *Mercuric chloride* solution or 10 per cent. *Ichthyol* is of special value in those cases in which there are deep-seated nodular formations.

Schiff has had good results from X-rays in a certain number of cases.

Dermatitis Papillaris Capillitii.

This is a "frambesiform disease of the nucha, usually extending upwards towards the occiput, presenting mixed sycosiform, nodular, and keloidal aspects." (Stelwagon.)

The treatment of this affection is surgical, and consists of snipping off the lesions with scissors when possible, or excising them with the knife. Electrolysis is a useful method for their destruction. Applications of *Ammoniated mercury* (20 per cent.) and *Ichthyol* (3j-3j) are also useful.

DISEASES OF THE NAILS.

Onychia.

Onychia is an inflammation of the matrix of the nail. The treatment is largely dependent upon the etiology of the case. If, as is sometimes the case, the cause is constitutional, then the treatment is that of the primary affection. Traumatic cases usually require incision, removal of the nail, antiseptic dressings, as the application of Iodoform and Bichloride gauze. In mild cases, frequent washing with Boric acid lotion and the application of a 25 per cent. *Ichthyol* ointment will be beneficial and sometimes prove curative. When suppuration takes place incision is the only possible remedy. Frequent change of dressings is necessary. It is often advisable to curette the matrix after removal of the nail. The flowing of a few drops of a 3 to 5 per cent. solution of Silver nitrate in Sweet spirits of nitre under the nail is often of value.

When infection of the tissue about the nail has taken place, the following ointment is useful :

Xeroformi,	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	grs. xlv.
Vaselin, .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3ij
Lanolin,	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3vj.

Syphilitic cases require Mercury or Potassium iodide internally.

Fluoric acid.—The pain is deep seated, as if in the bone, and is of a throbbing or splinter-like character ; the aggravation is at night.

Graphites.—Onychia with suppuration, associated with pustule and exuberant granulations.

Hepar.—Suppuration with swelling and tension, and great sensitiveness. Pain is severe, and, as is usual in suppurative cases, is of a sticking character.

Natrum sulph.—Pains are behind and under the nails, of a burning, sticking, or ulcerative character, and relieved in the open air.

Sulphur.—In cases associated with chronic constitutional diseases.

Sarsaparilla.—In chronic cases associated with aphthæ of the mouth ; syphilitic cachectic subjects.

Onychogryphosis.

(*Ingrowing toe-nail.*)

The treatment of ingrowing toe-nail is purely mechanical. The first thing is to secure properly fitting foot-wear, including both stockings and shoes. Some cases recover under temporizing methods. Those deserving of special mention include the scraping of the centre of the nail, and the insertion of a small fold of lint under the edge of the nail ; or a fold of lint may be introduced along the furrow after raising the edge of the nail, and applying plasters in circular strips. This is designed to remove the furrow from the irritation of the nail. Ultimately, the majority of cases are obliged to submit to radical cure, which means the removal of a portion of the nail and its matrix.

Onychauxis.

Onychauxis is an increased growth or hypertrophied condition of the nail. The treatment consists of the correction of the etiologic factor, which may be gout, rheumatism, or disease of the nervous system among the general causes, and traumatism or badly fitting foot-wear, or lack of cleanliness among the local causes.

The local treatment consists in the removal of the hypertrophied portion of the nails by proper cutting or trimming. In some cases it may be necessary to remove the nail *in toto* and curette the matrix. The operator should make it a rule to soak the nail thoroughly in a Sodium bicarbonate solution at first. Succeeding seances should be conducted by using the nail-file both delicately and skillfully.

Remedies for Onychauxis are *Graphites*, *Hypericum*, and *Sulphur*.

Onychomycosis.

Onychomycosis is a disease of the nail due to infection by some fungus, usually by favus, or ring-worm, though numerous other micro-organisms may play a part in its production.

The nails should be kept short and the cuticle cut away. This should not be done until the hands have been soaked in hot Mercuric chloride solution (1:2,000), and an application of Ammoniated mercury ointment (40 grs.—3j). Following this, one of the various parasitocides should be applied ; which one will depend upon the character of the infection. For further guidance concerning this subject, the reader is referred to the sections dealing with the parasitic affections of the skin.

Atrophia Unguium.

(*Atrophy of the nails.*)

The treatment of atrophy of the nails depends upon the particular constitutional dyscrasia which may be present. Arsenic, when used in relatively large therapeutic doses and continued over a long period of time, has proven beneficial in some cases. When the affection is due to improper manicuring the cure is obvious. In all cases it is necessary to protect the nails as much as possible, sometimes to the extent of wearing finger-stalls.

Nail Splitting is to be treated by the nightly application of some simple salve, and covering the fingers with finger-stalls. The nails should be cut closely and their edges carefully filed.

PARASITIC AFFECTIONS.**Favus.***

Favus is a disease due to a special micro-organism, the *achorion Schoenleinii*, and is characterized by the development of thick, yellowish, imbricated cup-like crusts which are pierced by hairs. The lesions are usually found upon the scalp.

The treatment of favus is rather difficult, for it must be carried out thoroughly; otherwise, the condition will surely recur. As the disease involves the scalp, the first procedure is closely clipping of the hairs in and around the lesions. At the same time it is wise to apply a mild solution of Mercuric chloride to prevent the spreading of the infection. After the hair has been carefully removed we make preparations for the separation of the crusts. To do this, we first soften the latter in plain Olive oil, or Olive oil in which 5 per cent. Salicylic acid or 1 per cent. Beta-naphthol has been dissolved. After the crusts have been thoroughly loosened the parts should be well washed, and the crusts removed by gentle friction with absorbent cotton soaked in one of the oily preparations above mentioned. The person who carries out the treatment must take measures to prevent infection of his fingers. To this end, he should dip his hands and finger tips in 2 per cent. Naphthol salve.

Following this, probably the next day, epilation should be practiced, a broad depilator being used for this purpose. All the diseased area should be gone over carefully, and all loose hairs carefully removed. This should be accomplished in from one to three sittings, according to the extent of the lesion and the tractability of the patient. Healthy hairs should not be removed; but if, perchance, they should be pulled out no harm is done, as they will grow in again.

We are now ready for the local applications. Those which give the best results are Pyrogallic acid, Resorcin, Chrysarobin, and Beta-naphthol.

* By Dr. Deming.

Pyrogalllic acid is best used as a 20 per cent. salve carefully rubbed into the diseased area.

Chrysarobin may be used in 10 per cent. salve, or, better still, in Traumaticin solution, carefully painted on. When used as a salve, it is capable of causing a local inflammation of the skin which may extend to the eyes and do considerable damage. It should never, therefore, be given to the patient to apply himself, but should always be applied by the physician himself. Even he must observe great precautions lest he do damage. A good plan is to make a wall or dike of a stiff salve along the line of the hair, which will prevent the overflowing of the Chrysarobin solution or ointment. The best method of application is that of rubbing the ointment well into the parts night and morning for five or six days. Then it is wise to wait for a day or two and wash the scalp with *Spiritus saponatus kalinus*. It is good practice to make frequent applications of Mercuric chloride solution (grs. i-5j) to the healthy scalp to prevent spread of the disease.

After waiting a few days to see if crusts are re-forming, if nothing happens, we may assume that everything is well, and we may proceed as before, or use some other application, as Beta-naphthol, Resorcin, etc.

If, as is usually the case, the treatment has been found efficient we may make applications of Resorcin in the strength of one to two drachms in a base of four ounces of Zinc oxide ointment, or we may apply 25 per cent. Sulphur ointment, or Ammoniated mercury in the strength of forty grains to the ounce.

Unna has cured some cases by careful cleansing of the parts with *Spiritus saponatus kalinus* and the use of Mercuric chloride solution, and at the same time thoroughly rubbing into the affected scalp tincture of Iodine.

No matter what method of treatment is employed it must be carefully carried out with periods of intervening inactivity to note if crusts are re-forming. As to the subsequent growth of the hair, it is only necessary to observe that if the papillæ of the hair are destroyed there will be subsequent baldness; if the hair bulb is unaffected, there will be a new growth when the disease is cured.

Occasionally, one meets with cases which resist all ordinary treatment. Then the X-rays are applicable; but my opinion is that other methods should be thoroughly exhausted first, as the X-ray is a dangerous remedy to use on the scalp because of a liability to produce a permanent baldness.

Occasionally, favus involves other parts of the body than the scalp; but the treatment is identical with that required in that locality. Favus of the finger-nails is particularly difficult to treat successfully. The nails should be cut as closely as possible and then soaked in a Mercuric chloride solution. Then we may apply a 10 per cent. solution of Chrysarobin in Traumaticin, or 10 per cent. Pyrogalllic acid salve.

If we wish to make certain that the fungus growth has been entirely destroyed, we make scrapings from the diseased portion of the scalp, and add a few drops of 10 per cent. Caustic potash solution. It may then be examined under the microscope.

Crocker recommends the following method for treating favus of the finger-nails. After clipping closely and thoroughly scraping, the following solution is applied :

Liquor potassæ,	
Aquæ destillat.,	āā ʒj.
Potassii iodidi,	ʒss.

This is applied on lint and covered with oiled silk for fifteen minutes. Then this dressing should be removed, and the following applied in the same manner and permitted *in situ* for twenty-four hours :

Hydrargyri perchloridi,	grs. iv.
Spirit. vini rectific.,	
Aquæ destillatæ,	āā fl. ʒss.

This treatment repeated daily until the skin becomes tender and begins to peel, when the treatment is discontinued and the parts bathed in a solution of Sodium hyposulphite in the proportion of one part to eight of water.

After the skin begins to return the treatment may be repeated as found necessary.

In following out this treatment of Crocker it should be remembered that if the first solution is not carefully corked evaporation takes place, and, as a result, the solution of Caustic potash may be too strong for therapeutic purposes. The moral is obvious.

Trichophytosis.*

This is a disease which is produced by the growth of one of the varieties of the trichophyton fungus upon the skin. It invades the epidermis of the free surface, the epidermic layer of the hair follicles and the hair, both within and outside of the hair follicles. Its essential lesion appears on the free surface in the form of a round, slightly elevated area which varies in color, according to the complexion of the individual, from pinkish to almost a slate color. The patch is the site of exceedingly minute vesicles that show more prominently at the periphery. By reason of the fact that the fungus abstracts all of the nutriment present in the epidermis which it requires for its nourishment, it dies where it has existed the longest (at the centre of the patch), and vegetates most luxuriantly at the periphery where the heretofore uninvaded epidermis offers pabulum for its growth ; hence, ring-form lesions ultimately form.

* This and subsequent sections on Parasitic Affections, by Dr. Gramm.

In hairy regions its onward march is into the hair follicles, causing inflammatory reaction of a low grade within them and even in the subcutaneous connective tissue, and the development of nodular lesions that have a bluish-red color. These nodules bring about a lumpy feel of the region involved. Curiously enough the subjective sensations are much more mild than the appearance of the condition would seem to warrant. The hairs are invaded by the fungus and its mycelium, and spores are found both upon the surface and within their structure. This causes a brittleness of the hair so that it breaks off a short distance beyond the mouth of the follicle, and it becomes loosened from the hair papilla and can be extracted without the exertion of any force and without pain.

In general subjective sensations are very slight wherever the disease exists in an uncomplicated form. If secondary inflammation supervenes, as in the genito-crural region, the subjective sensations will vary according to the make-up of the patient and the severity of the inflammatory reaction produced.

As the fungus is an ærobie one, theoretically the best treatment for its extinction is one which will prevent it from obtaining any oxygen from the substances which are placed in contact with the skin for curing the disease. This can be accomplished, in the first place, by avoiding cleansing the part by means of water washings and, in the second, by incorporating the parasitocides inimical to it in a hygroscopic menstruum, such as Alcohol Glycerin, or Boroglyceride, and by keeping Boroglyceride on the affected area during the intervals between the application of the selected drugs. This latter procedure is mussy and is apt to call forth objections from the patient, but is exceedingly efficacious. Many times they will be willing to put up with the inconveniences entailed by the treatment if its rationale is explained to them.

Trichophytosis of the free surface can rapidly be gotten under control by making applications of a saturated solution of Salicylic acid in alcohol to it twice a day and, after the alcohol has evaporated, applying a 50 per cent. solution of Boroglyceride in Glycerin and renewing the latter three or four times in the intervals between the Salicylic acid applications. Or, one or two grains of Bichloride of Mercury can be dissolved in an ounce of alcohol and applied in the same way (the susceptibility of the patient to the action of the Bichloride must be ascertained by careful supervision of the treatment by the physician). Or one or two grains of Bichloride of Mercury may be dissolved in an ounce of tincture of Benzoin, and the solution painted on and allowed to form a scale over the patch. This is to be left on for a day or two and then reapplied. Citrin ointment, diluted one-half or more with lard, is also useful, and a 50 per cent. solution of Boroglyceride in glycerin incorporated with it as in the following :

℞ Ungt. citrini, ℥ii-viii.
 Adipis, ℥i.
 Solut. boroglycerini (50 per cent.), f℥ii.
 Misce.

Oleate of Copper is an old and tried remedy in the form of the copper cent placed in vinegar and the resulting verdigris rubbed up with lard. It may be used as follows :

℞ Cupri oleatis, gr. xx.
 Lanolini,
 Adipis, āā ℥ss.
 Solut. boroglycerini (50 per cent.), f℥ii.
 Misce.

Sulphate of iron has also cured many a case in the form of the old home-made ink applications ; the inks on the market at the present time will not prove efficacious, however, as they are mostly solutions of an aniline color in water.

Ring-worm of the hairy regions requires more care in its handling than does the disease when it affects the free surface alone. As already mentioned, the fungus penetrates the hair follicles and also the hair in its entirety. On that account epilation must be practiced daily, the removal of the hairs being done for a distance of about a quarter of an inch beyond the apparently affected area. Removal of the hairs accomplishes two results : Firstly, it takes away a nidus for the growth of the fungus in the hair itself, and, secondly, it leaves the hair follicles unclogged by the hair, thus allowing remedial applications freer ingress into them. Where removal of all of the hairs on an affected patch is desirable a depilatory may be used. The one introduced by Brayton and endorsed by Pusey and Stelwagon is a very efficacious one. It is :

℞ Bari sulphidi, ℥iii.
 Zinci oxidi,
 Pulv. amyli, āā ℥iiss.
 Misce.

It is to be moistened with water at the time it is to be used until a thin paste is formed. A thin layer of it is then spread over the area to be treated and allowed to remain on sufficiently long (comparatively a few minutes), until the hairs protruding from the follicles are eaten off at the level of the skin. Sensations of slight heat or burning often indicate when it has remained in place long enough. A paper-knife or the back of a scalpel is then used to scrape it gently off of the skin. If the depilatory has acted properly all of the hair will have been destroyed and can be scraped off with it. If redness or marked subjective sensations indicate that it has acted too strongly a mild ointment should be applied for twenty-four hours before beginning the use of parasitocides. The scalp or bearded portion of

the face should receive one thorough water washing on commencing the treatment. Sapo viridis or Hebra's soap spirit should be used at this time. Subsequent cleansings should be done with oil or a 50 per cent. solution of Boroglyceride. The parasitocides that are to be used after the affected area has been cleansed are precisely the same as the ones recommended for ring-worm of the free surface. Many remedies are listed by various authors as being required when others fail but, in my opinion, failure in curing a case can usually be laid to the fact that the local treatment does not accomplish preventing the fungus from obtaining a supply of oxygen which is necessary for its propagation. Chrysarobin is a valuable addition to the remedies already mentioned, and can be applied in the same manner as directed under psoriasis. A saturated solution in Chloroform is painted on the patches until a goodly film of Chrysarobin is left on after the Chloroform evaporates. Then flexible Collodion is painted over it and the scale left on for several days, when it is to be removed and the same procedure repeated. It is not advisable to use it in quite young children, and the danger of provoking dermatitis by it must constantly be kept in view.

The very deep invasion of the subcutaneous tissue, termed kerion, in which oozing of a whitish-yellow, glairy fluid takes place from numerous openings in the affected (hairy) region must be treated by thorough epilation, one thorough soap and water washing, the free use of Boroglyceride solution and the parasitocides already mentioned.

Children affected with the disease should not be allowed to attend school, nor to come into close contact with other children during play. Their underclothing and headwear should be kept scrupulously away from all other children. If the scalp is the region affected, it is usually desirable that they wear a skull-cap and the regular headwear on top of that. Domestic animals should be carefully examined for evidences of the disease when an outbreak occurs in a family where some of them are kept, and, if they are found to be unaffected, the children should not be allowed to caress them for fear of infecting them with the disease.

Internal treatment is of doubtful value from the standpoint of any direct effect it may exert in combating the disease. Nevertheless, where clear indications for the administration of a remedy can be found patients will be found to recuperate quicker than where they are untreated by oral medication.

Sepia and Tellurium have long held a doubtful reputation for curing the disease. Others which may be studied are *Baryta carb.*, *Kali bichrom.*, *Kali sulph.*, *Lycopodium*, *Mesereum*, *Phosphorus*, *Phytolacca*, *Sulphur*.

Chromophytosis.

This is the dermatosis which is more commonly known as tinea versicolor or pityriasis versicolor. It is a vegetable parasitic disease produced

by the microsporon furfur and is characterized by the formation of brownish plaques, usually confined to the upper portion of the trunk, although long-lasting cases may show some lesions on the upper part of the arms. Fine, branny desquamation develops after sweating or bathing. Subjective sensations are absent or are very slight, and consist mainly of itching, which is most in evidence when desquamation is produced.

As the epiphyte which produces the disease never invades any other structures than the most superficial portion of the epidermis, its treatment is confined to removing the horny scales invaded by the fungus. To accomplish this the patient is directed to thoroughly cleanse the affected region with a strong soap, such as *sapo viridis* or a common scrubbing soap, using a nail-brush or other small, stiff brush to remove as much of the epidermic layer as possible, and afterwards dry the skin by firm rubbing with a coarse towel. Then a saturated aqueous solution of Hypo-sulphite of Soda is sopped on and allowed to dry *in situ*.

It must be remembered that the spores of the microsporon furfur are exceedingly hard to destroy, therefore recurrences are bound to occur unless the treatment is continued until all of the conidia have germinated and have developed the mycelium which gives the disease its characteristic coloration. Daily applications of the Sodium hyposulphite solution must be made until the disease seems to have vanished, and then two or three treatments a week must be continued for some months until the whole of the affected area takes on a normal appearance. So long as minute, shiny areas persist where the brown patches formerly existed the cure is not complete and systematic treatment must not be stopped. No matter how long a case has existed, the brownish coloration will take on a lighter hue after the first treatment, and will continue to fade from day to day until all has disappeared.

Remedies.—I have found *Natrum carb.* of marked assistance in patients suffering from the disease.

Erythrasma.

This is a vegetable parasitic disease which develops where adjacent folds of skin are habitually in contact, as in the axillæ and genito-crural regions. It is distinguished by a brownish or reddish-brown color of the patches, which have an appearance as though the fungus is more active at the periphery. Baerensprung claimed that it is produced by the microsporon minutissimum, but Unna states that it is produced by a fungus that is seen as a dense felt of very fine, twisted and winding, rarely distinctly septate and non-branched hyphæ, which almost always show cylindrical swellings and differs from the microsporon in that it shows no isolated collection of spores. Subjective symptoms vary according to the sensitiveness of the skin of the individual.

The same treatment as directed for chromophytosis is to be applied in this disease.

Remedies.—*Natrum carb.* has seemed useful here, as in chromophytosis.

Scabies.

This is an animal parasitic disease of the skin characterized by the development of minute papulo-vesicular lesions due to the invasion of the rete mucosum by the *acarus scabiei* and, later, by multiform lesions that tend to appear in an aggravated form in certain regions (sites of predilection), these being the webs of the fingers, flexor surfaces of the wrists, the the regions anterior and posterior to the axillæ, abdomen, mammæ and penis. Scattered among the other lesions cunuliculi, or burrows, made by the mite can be demonstrated. The face usually escapes invasion. Subjectively, itching is experienced, and this is much worse at night. It generally takes about three weeks for the disease to spread all over the body.

Two indications for treatment confront us in dealing with this affection; firstly, the destruction of the parasite and, secondly, the cure of the lesions brought about by the secondary inflammatory changes in the skin.

Ridding a patient of the *acarus* is a comparatively easy procedure, and should be completed in three days. One of the best local applications to use for this purpose is that recommended by Kaposi. It is:

R	Beta-naphtholi,	. . . . .	℥iii.
	Cretæ præcipitat,	. . . . .	℥ii.
	Sapon. viridis,	. . . . .	℥x.
	Adipis,	. . . . .	℥iiss.
	Misce.		

The patient is directed to take a hot bath the first night before retiring, and dry himself with brisk rubbing with a coarse towel. Afterwards the ointment is thoroughly rubbed into the whole cutaneous surface, with the exception of the face. The ointment is allowed to remain on the skin until the following night when another hot bath, thorough drying with a coarse towel, and application of the ointment constitute the second step in the treatment. The ointment is then again allowed to remain *in situ* for another period of twenty-four hours, when the same procedures must be repeated and constitutes the third step in the treatment. After the third application of the ointment it is again allowed to stay on for twenty-four hours, at the end of which time it is thoroughly washed off. This constitutes the parasiticide treatment. Longer application of the parasiticide is unnecessary if the various steps in the preparation of the skin, its drying, and the application of the ointment have been done in a conscientious and intelligent manner. Repetition in the use of the parasiticide for many days or even weeks will only bring about an aggravated dermatitis, among the lesions of which no cunuliculi or other evidences of the existence of the

Another valuable application is :

Misce.

Where it is found that strong applications are contra-indicated by reason of the severity of the inflammation produced by the presence of the parasite, or where the patient is a child (say under twelve or fourteen years of age), the following should be used :

Misce.,

At the conclusion of the parasitocidal treatment the patient must be carefully examined from time to time for the minute papulo-vesicular lesions which indicate a reinfection of the surface by the acarus. Emphasis cannot be too strongly laid on the statement that the appearance of inflammatory lesions after the first campaign in the warfare against the mites does not prove that all of the invaders have not been annihilated. As already stated, three applications of a sufficiently strong parasiticide at intervals of twenty-four hours (allowing it to remain on the surface until the following application is made), should and does destroy all of the parasites if properly done. The danger of infecting others is, of course, completely removed at the end of three days. Inflammatory lesions may continue to

appear for some time upon a skin which was infected with scabies, but they are due to the secondary dermatitis which supervenes or to a secondary infection with pus organisms.

The treatment of the secondary dermatitis or secondary pus infection narrows itself down to the measures applicable in any acute inflammatory process not called into existence by the presence of parasites. The principles of treatment laid down under eczema will govern the choice of local remedies, and it is well to start with the mildest soothing prescriptions after the parasiticide has done its work. The secondary inflammations cannot be overwhelmed by powerful measures, but must be gradually cured by suitable lotions or ointments intelligently selected, and by internal remedies applied according to their indications. It is folly (or worse), however, to rely upon remedies given internally to cure these cases unless the parasites are first killed.

Remedies.—*Arsenicum*, *Carbo veg.*, *Causticum*, *Cinnabaris*, *Croton tigl.*, *Hepar*, *Lobelia*, *Lycopodium*, *Mercurius*, *Nitric acid*, *Fsorium*, *Sepia*, *Sulphur*, *Sulphuric acid*.

Pediculosis.

This is a disease produced by the presence of lice upon the skin. There are three forms of the affection, each being due to a different variety of louse—pediculosis corporis (or, more properly, pediculosis vestimenti) is produced by the largest variety, commonly known as the body louse; pediculosis capitis is the result of the presence upon the head of the medium-sized or head louse; and pediculosis pubis, which is produced by the crab louse. The body and head lice travel from place to place in search of nourishment in the respective regions they inhabit; while the crab louse hooks itself on a coarse hair near its emergence from a hair follicle and subsists there for a considerable time.

Pediculosis Capitis.

The medium-sized louse produces the lesions found in this variety of the disease by inserting its haustellum or sucker into a follicle and abstracting thence its nutriment. On that account, the first lesion produced is a papule, partly hæmorrhagic in character. The solution of continuity thus produced is extremely liable to secondary pus infection, so that in the majority of cases pustules and exceedingly offensive discharges are features which complicate the affection and need to be considered in applying remedial measures.

Where a case is seen early and where no secondary pus infection has had time to develop, the compound tincture of Staphisagria (tincture of Staphisagria, one pint; Glacial Acetic acid, one fluid drachm), tincture of Cocculus Indicus, or a saturated aqueous solution of tobacco (made from tobacco stems), will rapidly kill the lice and do away with the subjective

sensations. It must be emphasized, however, that these applications must be made night and morning until the last of the nits has hatched out and all of the lice killed.

The nits are glued to the hairs, like strings of beads, by an exceedingly resistant cement substance. This, however, can be dissolved by acids and alkalies. For that reason Glacial Acetic acid is added to the tincture of *Staphisagria*. If their loosening is not accomplished by it, bathing the hair with vinegar or a watery solution of Bicarbonate of Soda (which must be well rinsed off with plain water) will bring about the desired result. Then their removal is easy by combing the hair with a fine-toothed comb, which is to be inserted parallel to the scalp and drawn along the whole length of the hair. Combing by pressing hard upon the surface of the scalp is reprehensible practice and must be discouraged, as it only causes abrasion of the tissues and does not reach the point where the nits are strung on the hairs. The patient should be instructed that the nits are always located about a line from the surface of the scalp, and that no good can be accomplished by scratching the scalp and rendering it possible to have pus infection occur.

It is in old and neglected cases that the most difficulty will be met. Here pustules, matting of the hair, and an offensive odor characterize the disease. Impetigo lesions will be found on the nape of the neck, back of the ears and in front of them, and even on the face and fingers (secondary pus infection from scratching and from the accumulation in the hair of dust and dirt). Lymphatic glands will be found enlarged on the nape of the neck; and, by the way, they never suppurate.

In extreme cases a number of days may be required to cleanse the hair of the accumulated filth and remove the matting. Daily washing with soap (and plenty of it), and water and gentle combing will prepare the way for remedial measures. It may even be necessary to apply wet compresses or a poultice enclosed in cheese-cloth and worn as a cap. Then, if much discharge and many pustular lesions are present, powdered *Staphisagria* seeds are to be rubbed into the hair and repeated for a day or two until this complication is under control. This is a dirty-looking but necessary procedure, and its unavoidable character may be explained to the patient. It rarely becomes necessary to cut the hair, even in girls, where it is long.

When the cleansing of the hair and scalp is complete, and the pus infection on the scalp is on the mend, the liquid applications already mentioned are to be applied, preference being given to the compound tincture of *Staphisagria* as being less liable to do systemic damage than the more poisonous *Cocculus Indicus* tincture or the Infusion of Tobacco. The nits are to be removed from day to day by the combing already mentioned.

The impetigo lesions are readily amenable to treatment when the scalp is clean. For this purpose an ointment composed of Ammoniated mer-

cury, twenty to sixty grains to an ounce of Zinc ointment, is to be applied to surfaces devoid of hair, not to the scalp.

Pediculosis Corporis seu Vestimenti.

The body, or clothes louse, inhabits the underclothing and can most readily be found near the seams of clothing worn next to the skin. The parasite travels from the clothing to the skin to feed (its nits are found on the clothing), hence the localities where most lesions are found are where the underclothing is held most closely against the skin, therefore across the scapular regions and back and over the abdomen. The intense itching which is a feature of this variety of the disease causes violent scratching by the patient and, on that account, scratch-marks in great numbers in the regions just mentioned should lead the physician to make a most careful inspection of the underclothing, even of patients whose cleanly habits would, under other circumstances, preclude the suspicion of the existence of a filth disease.

This variety of the disease is rapidly amenable to treatment if the habitat of the parasite is borne in mind. The underclothing should be changed daily and repeatedly boiled, and the outer clothing baked in an oven until all of the nits have been killed. The bed-clothing must receive the same attention. The patient may anoint himself nightly with a mild Beta-naphthol ointment, say ten grains to the ounce of Petrolatum or Sulphur, twenty grains to the ounce, to render the skin obnoxious to the lice as a feeding-ground. If, however, the scratch-marks are in such great abundance that the use of these medicaments would place the patient in danger of developing a dermatitis from their use, they should be preceded by alkaline washes, such as Bicarbonate of Soda or Carbonate of Potassium, twenty grains to a pint of water, until the scratch-marks show signs of disappearing, when the Beta-naphthol or Sulphur ointments may be used.

Pediculosis Pubis.

While the most common habitat of the crab louse is the coarse hair of the pubic region, it must be remembered that wherever short stiff hairs exist this parasite can be found. If a case remains unrecognized for a long time the pediculus will travel from region to region; in fact, in one case which came under my observation in a very hairy man, the eyebrows, eyelashes, moustache, axillæ, sternal region and the thighs, in addition to the pubic region, showed numerous lice and nits. On that account it is advisable to recommend that the parsiticide be applied to all neighborhoods where short, coarse hairs exist before putting it on the pubic region. By these means other localities are rendered untenable by the young lice on their emergence from the nits, and quick results are obtained.

The medicament best known and most frequently used by the laity,

Mercurial ointment, needs only to be mentioned to be condemned. While it is very efficacious the great danger of producing mercurial dermatitis or complete mercurial intoxication, salivation, is too great to make it a safe measure to apply.

The compound tincture of Staphisagria, already mentioned under pediculosis capitis, should be applied night and morning to all localities where thick and stiff hair exists, and then to the pubic region until all nits have hatched. No danger of poisonous effects need be apprehended by this procedure. A grain of the Bichloride of Mercury to one ounce of Alcohol is also of value, but should be cautiously applied to the circum-anal region.

The nits will, in time, drop off of the hairs, or they may be removed by means of a fine-toothed comb.

Secondary pus infection is of rare occurrence in this variety of pediculosis.

CHAPTER XXVII.

DISEASES OF THE EYE.

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DISEASES OF THE LIDS.

Eczema of the Lids.

ECZEMA of the eyelids is usually but a part of eczema of the face ; hence, its treatment is mostly the same as that required in the latter affection. It is of the greatest importance that the physician take cognizance of both local and constitutional factors in outlining his treatment. Of the strictly local causes, epiphora due to obstruction of the lachrymal duct or misplaced punctum is an excellent example. Before the eruption can be cured it is necessary to remove the lachrymal obstruction (*vide infra*). Eczema occupying the inner canthus is a frequent accompaniment of chronic rhinitis ; its cure demands the treatment of the nasal lesions.

The eczema accompanying phlyctenular ophthalmia is to be regarded in part as of constitutional origin, although it depends in great measure upon the profuse overflow of tears irritating the skin.

An eczema limited to the margins of the lid suggests refractive error or muscular insufficiency as the underlying cause, which must be removed to effect a cure.

The constitutional treatment of eczema of the eyelids is that of eczema in general, fresh air, good elimination, proper diet, and internal medication (*vide* section on Eczema).

Locally, we may make use of Zinc oxide, or the ointment of Yellow Oxide of Mercury. The preparation selected should be applied in a very thin layer.

Herpes Zoster Ophthalmicus.

For the eruption on the eyelids and vicinity the best local application is a simple dusting powder consisting of Zinc oxide, 1 part ; Boric acid, 2 parts ; to this may be added an equal quantity of talcum to prevent caking, when there is a moisture of the skin.

When crusts are present they should be removed carefully after softening by the application of Hydrogen dioxide.

The medicines required for internal administration include, in the early stages, *Belladonna* and *Aconite* ; later, *Arsenicum*, *Apis*, *Graphites*.

For the severe neuralgia which so frequently follows herpes zoster involving the ophthalmic division of the fifth pair of nerves, especially in old people, no remedy is as efficient as Aconitine administered as recommended in the article on *Tic Douloureux*.

When, as sometimes happens, the cornea is involved in the lesions, we have to deal with a serious state of affairs, which demands most painstaking treatment. The principles involved in the treatment of corneal ulceration must be enforced. The eyes should be kept closed by an evenly applied bandage. Atropia in the strength of four grains to the ounce should be applied twice daily. It not only relieves the pain, but prevents adhesions in case of the development of an iritis.

Phlegmon of the Eyelids.

Phlegmon of the eyelids should be carefully watched to make sure that there is no disease of the deeper structures. The treatment consists of the application of *hot* Bichloride fomentations to the parts to favor the movement of pus to the surface. Hot Boric acid fomentations are permissible; but poultices should be strictly forbidden. With the appearance of the first sign of suppuration the abscess should be opened freely, the line of incision being parallel to the muscular fibres. The subsequent treatment consists in keeping the pus cavity clean and well-drained until healing is complete.

When associated with constitutional debility, as is sometimes the case, the general health should be considered in the treatment. Supportive measures are usually required under these circumstances.

Hepar is the main remedy.

Blepharitis Marginalis.

The treatment of blepharitis marginalis can be successful only when the physician takes the pains to determine the underlying cause of the case in hand. To treat these cases in a routine manner can result in but one way—failure. A very large proportion of the uncomplicated cases, whether mild or severe, yield promptly to the correction of refractive errors or muscular insufficiencies, and that, too, in cases in which the refractive error or muscular weakness is of but mild degree.

It is important in all cases, no matter what their causes may be, to protect the eyes against the irritating effect of high winds, dust, smoke, chemical vapors, etc.

When blepharitis marginalis is associated with eczema of the face, phlyctenular ophthalmia, and other ocular and constitutional manifestations, close attention must be paid to the patient's general health.

Stubborn cases require the application of the modified Pagenstecher salve, which consists of one grain of Yellow Oxide of Mercury to one

drachm of Vaseline. This is applied at night to the roots of the lashes. To insure success, the lids must first be thoroughly cleansed of all scales and crusts. The best solution for this purpose is one-half drachm of Bicarbonate of Soda to six ounces of warm water, applied by absorbent cotton or soft linen rag.

Internally, *Graphites*, *Arsenicum album*, *Arsenicum iod.*, *Petroleum*, *Sulphur*, *Calcareo carb.*, or *Antimonium tartaricum* should be prescribed.

Hordeolum.

A fully developed hordeolum or styne should be treated by frequently repeated applications of hot fomentations to the lids of saturated solution of Boric acid (*i. e.*, fifteen to twenty grains to the ounce). Belladonna is the best remedy to administer before the formation of pus. When pus forms, the styne should be evacuated with a narrow-pointed knife, the application of hot Boric acid being continued. If the swelling persists despite the above treatment, the affected part should be rubbed twice daily with the Yellow Oxide of Mercury Ointment.

Patients who are subject to recurrences should be subjected to a careful examination to determine if an error of refraction exists. If this is found, as is usually the case, it must be corrected.

Stynes when seen in their incipiency may be aborted by the application of a *minute* drop of *pure* Carbolic acid to the orifice of the hair follicle, the infection of which has produced the lesion.

Hepar and *Pulsatilla* are useful remedies for preventing recurrences.

Chalazion.

(*Tarsal cyst.*)

Small chalazia may be dispersed by hot fomentations and massage with the Oxide of Mercury ointment to which reference has already been made. *Staphisagria* internally is an important adjunct to the treatment.

Most cases, however, require operative measures for their cure. The conjunctiva is thoroughly anæsthetized by applications of a 4 per cent. solution of Cocaine. The affected lid is everted and held securely in position, and a small linear or crucial incision is made into the cyst. Following this the contents of the cyst are removed with a small curette, the walls at the same time being gently but thoroughly scraped. The lid is next well cleaned with Boric acid solution, and returned to its proper position.

Considerable swelling sometimes follows this little operation. The after-treatment consists in application of hot Boric acid fomentations when the swelling is considerable, and of instillation of the Boric acid solution.

Staphisagria, *Conium*, and *Thuja*, are useful remedies for the prevention of recurrences.

The recommendation made by some authors that chalazia should be dissected out is not to be countenanced. The operation is difficult of performance, owing to the location of the tumor in the cartilage and its thin walls. The subsequent reaction, moreover, would be much greater than that following the simple operation recommended above.

Milium.

These small sebaceous cysts give little or no trouble, but their cure is often demanded because of their unsightliness. The treatment is very simple. The tumor is incised, its sebaceous contents expressed or removed with a small curette, and, if the operator sees fit, the peeling out of the cyst wall with a small pair of forceps.

There is little or no tendency to recurrence.

Trichiasis.

Mild cases of trichiasis are best treated by epilation with the ordinary cilium forceps. When the incurving lashes reappear the operation may be repeated. We are oftentimes sufficiently fortunate to find that this leads to atrophy of the hair bulbs and radical cure.

This failing we may resort to electrolysis. A small platinum needle electrode attached to the negative pole is inserted into the follicle from which the incurving lash grows. The positive electrode may be placad on an indifferent portion of the body. The current is permitted to flow for a few seconds, during which time a slight bubbling is seen about the needle. The hair bulb is destroyed by the electrolytic action, and the lash can be lifted out without any effort.

Severe cases require surgical intervention, the indicated operations being of such a character as to demand the attention of an experienced oculist.

Œdema of the Lids.

Œdema of the eyelids is so regularly a symptom of some other local or constitutional affection that nothing can be said concerning its treatment.

Epithelioma of the Lids.

Small ulcerations of the lids having all the clinical features of epithelioma have been known to disappear under the local and internal use of Thuja. Notwithstanding this, the most certain way of protecting our patient's interests is the removal of the tumor by the knife at the earliest possible moment. Delay is hazardous.

X-ray treatment offers unusually favorable opportunities for the cure of epithelioma of the lids, but is open to the very serious objection that careless or inexperienced operators can do irreparable damage to the eyeball. To avoid such calamities, it has been suggested that the affected eye

be thoroughly cocaineized, after which a metal shield of proper shape and size be placed between the eye and the affected lid. Adjoining parts of the face must also be protected by suitable shields. While the results of X-ray therapy in palpebral epithelioma are good, we should never advise it excepting in inoperable cases, or when the patient positively refuses to submit himself to the knife.

Phthiriasis.

(*Pediculosis of the lids.*)

Lice on the cilia may be removed by careful application of the official blue ointment or pencilling the eyelashes with Mercuric chloride solution. Care must be exercised in practicing the treatment lest the operator unwittingly carry the infection to himself.

Chancre of the Lid.

Owing to the difficulties of diagnosis, chancre of the eyelid is rarely submitted to treatment until secondary manifestations appear. Should an early diagnosis be made, the best local treatment is one that approaches the expectant, as the application of the well-known "black wash." With the advent of the secondary symptoms, the treatment is the same as that advised in another section of this work for constitutional syphilis.

Xanthelasma.

Excision is the favorite treatment, but is unsatisfactory owing to the liability of the lesion to reappear. Electrolysis has produced good results in some cases, but is no more reliable as regards the prevention of a recurrence than is excision. The application of Trichloroacetic acid has cured small xanthelasma patches.

Ptosis.

Hysterical ptosis is very difficult of cure. Cases are liable to go on for an indefinite period resisting all our best directed efforts. Eventually recovery takes place, usually as the result of some properly directed suggestion.

Congenital ptosis is amenable to operative procedures only. The results are fairly satisfactory.

Acquired ptosis is nearly always of syphilitic origin, and when taken in hand early, and treated persistently, is followed by good results. Potassium iodide should be given in full doses as recommended in the section on the treatment of syphilis.

Rheumatic cases yield to *Rhus tox.*, *Gelsemium*, *Bryonia*, *Colchicine*, and *Natrum salicyl.*

Electricity is advocated by electro-therapeutic specialists; their praise of this remedy is not borne out by the experience of oculists.

Lagophthalmos.

The treatment of this symptom has already been considered under the heading of facial paralysis. When these measures fail, we must resort to the operation known as tarsorrhaphy.

Blepharospasm.

Symptomatic blepharospasm is due to irritation of the eyeball, and requires for its cure measures directed to the removal of the primary inflammation. When so severe as to be a source of special suffering, applications of Cocaine or Holocaine to the eye are useful palliatives. Within bounds, blepharospasm is to be regarded as a conservative symptom, which prevents an inflamed eye from being used or abused.

Essential or central blepharospasm offers an unfavorable prognosis. Remedies which have been recommended include *Agaricus*, *Cicuta*, *Strychnia*, *Conium*, *Gelsemium*, and *Galvanism*.

Entropion.

Entropion may be spasmodic or temporary or organic. The spasmodic variety is usually very amenable to treatment, subsiding after the removal of the cause. In the meantime, the inverted lid should be placed in its proper position and held there by applications of contractile Collodion and cotton to the skin of the lid and cheek. This dressing should be renewed every two or three days.

Organic or cicatricial entropion is amenable only to plastic operation, which should be performed by an ophthalmic surgeon. Temporizing by the application of escharotics to produce cicatricial contraction may do very well in the hands of those experienced; but, as in the case of all treatment by escharotics, one never knows how far the chemical destruction of tissues will extend. The knife after all is the safest, notwithstanding the dread the patient may have of "operation."

Ectropion.

Mild and recent cases may be relieved by careful bandaging. The main inconvenience in most cases is the overflow of tears owing to the removal of the lachrymal punctum from the eyeball. This evil may be counterbalanced in great measure by slitting up the caliculus, thus giving free drainage to the lachrymal apparatus.

The majority of cases of ectropion, however, demand surgical operation for their cure.

THE LACHRYMAL APPARATUS.

Acute Dacryoadenitis.

This is an inflammation of the lachrymal gland, and is a very rare affection. It bears an important clinical relationship to mumps, and may be secondary to influenza, variola, leucocythæmia, gonorrhœa, and tuberculosis. Its treatment is carried out on the same general principles as are called for in acute glandular inflammations, namely, hot antiseptic fomentations, *e. g.*, Boric acid and weak Bichloride solutions, and with the first sign of suppuration free incision. The remedies from which a selection may be made include *Aconite*, *Belladonna*, *Mercurius*, and *Hepar*.

Chronic Dacryoadenitis.

This is characterized by a swelling and induration of the lachrymal gland. The treatment is both local and constitutional. Locally, we may apply Iodine or the Cadmium iodide ointment. Internally, Potassium iodide in small doses is the most efficient remedy. We may also think of remedies having clinical relationship to indurated and enlarged glands, as *Conium*, *Arsenicum iod.*, *Calcareo iod.*, *Iodium*, and *Sulphur*.

Fistula of the Lachrymal Gland.

The treatment of this affection had better be left to the oculist whenever one is available. The closure of the fistula may be effected by operation, but it is always done at the expense of endangering a recurrence of the dacryoadenitis which produced the fistula.

Dacryops.

(*Cyst of the lachrymal gland.*)

The treatment of dacryops is entirely surgical. An opening should be made into the sac. To insure its permanency, a portion of the sac may be excised, systematic reopening of the wound by a probe, or passing a silk thread through the wall of the cyst, tying it, and permitting it to slough its way out.

Atresia of the Lachrymal Punctum.

The location of the punctum is first determined, and an opening teased by a delicate, sharp-pointed probe. Next the canaliculus is split. The case requires repeated attention to prevent subsequent closure of the opening thus made. If the exact position of the closed punctum cannot be made out the canaliculus can be found by cutting vertically for about two millimeters into the lid edge with a small pair of scissors. On the nasal surface of this incision a fine probe will usually detect the canal without difficulty.

Blenorrhœa of the Lachrymal Sac.

This condition being secondary to lesions of the nasal cavity, it is essential that the latter receive careful consideration in planning the treatment.

The special symptoms demanding relief are the epiphora and the accumulation of discharge in the lachrymal sac. The indications are then for complete and thorough drainage. The sac may be emptied readily by pressure over the tumor, the discharge usually escaping by way of the punctum. This procedure should be practiced frequently. The sac should also be syringed out with an Anel syringe, through the lachrymal punctum, weak Bichloride solutions (1:8000), or saturated solution of Boric acid being used for this purpose. If this plan does not bring the desired result, the canaliculus should be slit, and the accompanying stricture of the nasal duct divided or dilated. To accomplish this the punctum, usually the lower, if it is not already large enough to admit easily the probe-pointed knife of Weber or Bowman, must be dilated with a delicate conical sound.

The lower lid is drawn down and outward with the fingers or thumb of left hand, the patient being directed to look upward, and the point of the probe introduced into the punctum nearly vertically; then with the lower lid edge on the stretch, the instrument is brought into the horizontal position or a little below, and following the line of the lid edge is pushed gently toward the nose till the point meets the firm inelastic resistance of the lachrymal bone.

On withdrawal of the sound the lachrymal knife is passed along the canaliculus as was the probe, with its cutting edge up and a little back; so soon as the resistance of the nasal bone at the inner wall of sac is felt, the handle of the knife is raised to the vertical position and touching the inner end of brow. This movement of the knife divides the upper wall of the canaliculus, thus converting it into an open gutter from the punctum to the caruncle.

The knife is now exchanged for a small Bowman probe, which comes in eight different sizes, and this following the same course is, on reaching the vertical position or a little beyond, pushed gently and slowly downward toward the posterior edge of the wing of the nose till its lower end rests on the floor of the nostrils. The sound should be introduced with the utmost gentleness for fear of creating a false passage, the effort being repeated over several days if resistance is met. The obstructed or strictured portion of the duct lies usually either at the lower end of the lachrymal sac, or a little above the nasal extremity. After a successful introduction, the sound is left in place a few moments, and on each following day a larger size is used till the duct will carry without binding the Nos. 6 to 8 of the Bowman set of probes. To prevent recontraction of the strictures it is well to pass a medium-sized probe at intervals for a number of months. It is

only in the milder cases that entirely favorable results, without recurrence, are secured. The slitting of the canaliculus and subsequent passage of probes can be made quite painless by injecting into the lachrymal sac a few drops of Cocaine, 4 per cent. solution, with a delicate-pointed syringe (Anel).

In intractable cases of lachrymal obstruction with blenorrhœa of the sac the destruction or extirpation of the latter may exceptionally be demanded, more particularly in cases where one cannot safely wait for the slower process of treatment outlined above; for example, in coincident corneal ulceration, or when operations on the eyeball are to be done, or when an impassable stricture of the nasal duct exists.

Electrolysis has been advised by some surgeons as an efficient means of maintaining the patency of the duct, but the general trend of opinion is adverse to this procedure.

The remedies for blenorrhœa of the sac include *Pulsatilla*, *Hepar*, *Hydrastis*, *Mercurius*, *Kali bichromicum*, and *Euphrasia*.

Acute Dacryocystitis.

In the beginning of an attack of dacryocystitis, the use of ice-cold applications and the internal administration of Belladonna will sometimes succeed in aborting the disease. When it fails, we must face the fact that suppuration will take place. We then apply hot compresses saturated with Boric acid or weak Bichloride solution, and covered by rubber tissue. As soon as there is evidence of pointing, an incision should be made. The hot fomentations should be continued until the swelling has subsided, after which the case should be treated as one of blenorrhœa of the sac. Occasionally, this external opening into the sac fails to heal, and the resulting *fistula lachrymalis* with its constant discharge of tears and mucus on the cheek will then persist till the drainage by way of the lachrymal duct is re-established; its closure may be further assisted by cauterization of its edges.

DISEASES OF THE CONJUNCTIVA.

Hyperæmia of the Conjunctiva.

Acute conjunctival hyperæmia is usually of but little importance, as it subsides rapidly after its cause, such as exposure to wind, the foreign body in the eye, etc., is removed.

Chronic conjunctival hyperæmia is due in the vast majority of cases to errors of refraction or muscular insufficiencies, or defective accommodation. The correction of these will bring about a cure. Recovery will be hastened by the application of hot fomentations two or three times daily, and instillation of saturated solution of Boric acid.

Some few cases originate in catarrhal rhinitis, chronic alcoholism, gout, etc., which, when present, must be treated.

Acute Catarrhal Conjunctivitis.

The degree of rest and protection for the eye must vary according to the severity of the inflammation and the patient's social and business necessities. At the same time, it is the part of wisdom, whenever possible, to enforce strict rest of the eyes for the first two or three days at least. The patient must refrain from reading, writing, etc., and he must avoid strong light and exposure to winds. The best protection is that afforded by not too darkly "smoked" glasses, when obliged to go out-of-doors, or subduing the light of the room in which the patient is confined.

It is important that every case be carefully examined to determine the cause of the conjunctivitis. Thus, the lids should be everted and the conjunctival surfaces and folds carefully inspected for the presence of a foreign body.

During the irritative stage of the first day or two moist compresses and soothing lotions, as Boric acid (grs. xv.-3j.), Sodium bicarb (grs. v.-3j.), two or three drops of which may be dropped into the eyes every three hours, gives great relief.

During this stage, *Aconite* or *Belladonna*, according to the indications, should be given internally.

So soon as the discharge appears, change the remedy to *Pulsatilla* or *Euphrasia*, and use a collyrium of one-quarter to one grain of Zinc sulphate to the ounce of a saturated solution of Boric acid three times daily.

The type of conjunctivitis accompanying measles and other exanthemata (Exanthematous conjunctivitis) is to be treated as the simple catarrhal variety.

Chronic Catarrhal Conjunctivitis.

The treatment of chronic catarrhal conjunctivitis consists very largely, if not entirely, of the determination and removal of the exciting cause of the disorder. This being done, the natural tendency of the disease is to prompt recovery. These causes include errors of refraction, muscular insufficiencies, occupations exposing the patient to dust, wind, irritating vapors, associated ocular lesions, as of the lachrymal apparatus, distorted or misplaced eyelashes, bad general hygiene, etc.

The local applications are the same as those required for the acute variety.

Medication must be based upon the constitutional state of the patient.

Purulent Conjunctivitis.

(*Gonorrhæal ophthalmia; ophthalmia neonatorum.*)

Certain facts which may be stated tersely as follows should be thoroughly kept in mind by all medical practitioners :

1. Purulent ophthalmia is nearly always of gonorrhœal origin, and should be so treated invariably.

2. It is one of the most frequently encountered causes of incurable blindness.

3. Prophylactic measures are very successful; if they do not prevent the disease they at least cause it to run a mild course.

4. Proper systematic treatment will, when instituted early, almost certainly restore the eyes to their normal condition.

5. The disease is highly contagious, so that care must be exercised by attendants and nurses to prevent the spread of the infection.

Prophylaxis.—This relates to the care of newborn children, the mothers of which are the subjects of suspicious vaginal discharges, and to cleanliness and disposal of soiled dressings on the part of adults who have gonorrhœa.

In the case of women about to be confined, and who have suspicious vaginal discharges, the latter should be examined to determine the presence of the gonococcus. Measures for its cure should be instituted promptly. For several days prior to the expected day of labor, the vagina should be douched three or four times daily. Once a day applications of Argyrol or Protargol in 10 per cent. to 25 per cent. solution should be made.

As soon as the head of the child is born the eyelids should be wiped carefully and thoroughly with dry absorbent cotton. Immediately after birth, the edges of the eyelids must be washed with saturated Boric acid solution, and a drop of a 1 per cent. to 2 per cent. solution of Silver nitrate instilled into the conjunctival sac; or the ocular and palpebral surfaces may be irrigated with 10 per cent. Argyrol solution.

All dressings and fabrics which *may* have been soiled by discharges *must be destroyed*. The nurse must pay the strictest attention to cleanliness of her hands, lest she carry the infection to herself or others.

Adults who are the victims of gonorrhœa must exercise the greatest possible care as to cleanliness of their hands after urinating or handling soiled garments and dressings. They should avoid endangering others by the use of other than their own private towels. Garments and towels must be boiled; dressings must be burned.

If but one eye is involved the other should be protected, after thorough cleansing, by sealing it under a bandage, or by the use of Buller's shield (a watch-glass fastened to the edges of the orbit with adhesive plaster). The advantage of the Buller shield is that the eye can be used if necessary, and it can, moreover, be watched for the first appearances of infection. The patient should always lie on the affected side, so that drainage shall be away from the sound eye.

During the stage of infiltration and thin discharge, the conjunctival surfaces should be flushed frequently with saturated solution of Boric acid

from a pledget of absorbent cotton. This irrigation must be made as often as is required to keep the surfaces clear of discharge. Such attention must be maintained both day and night, and demands the attention of two nurses, one for day and the other for night; or the nurses may work in eight hour shifts. Even with two nurses on the case, the *work is not one which should be accepted by the lazy or neglectful.*

In this stage also, continuous cold applications should be made with compresses of gauze or linen taken from a block of ice and changed at short intervals, *i. e., while they are still cold.*

Rhus and *Apis* are the most important remedies in the stage of infiltration.

Just as soon as the œdematous swelling of the conjunctiva and lids begins to abate, and the discharge grows thicker, the iced applications should be discontinued. *Pulsatilla* or *Argentum nitricum* should be given internally, and the main dependence locally should be on free flushing of the eyes with saturated Boric acid solution, or Potassium permanganate in wine-colored solution.

With the appearance of a purulent discharge, the local application of Silver nitrate in 1 per cent. to 2 per cent. solution is indicated. The technique of its administration is important. The lids must be everted, after which the solution should be painted over their conjunctival surfaces with a cotton-wound probe by the physician himself. After a few seconds the Silver nitrate should be neutralized by flushing the part with salt solution in the proportion of one drachm to the pint of water. This application of Silver nitrate must be made once daily.

As equally effective and, in the hands of the general practitioner, a safer preparation is Argyrol, which may be used freely in 20 per cent. to 30 per cent. solution several times daily, and always after cleansing the eyes. Its application does not require the eversion of the eyelids.

As the greatest danger in purulent ophthalmia lies in ulceration of the cornea, great care should be exercised that it be not injured during the handling of the lids. I believe that *in the hands of any one but a specialist, the eye is safer without frequent attempts at eversion of the lids.*

Atropia should be instilled into the affected eye or eyes two or three times daily from the beginning in anticipation of corneal involvement. The strength of the solution used should be four to eight grains to the ounce for adults; two to four grains to the ounce for children.

Vaselin should be applied freely to the lid edges to prevent agglutination.

Iced applications are always contra-indicated when there is a disposition to membranous deposit on the palpebral conjunctiva.

Phlyctenular Ophthalmia.*(Lymphatic ophthalmia.)*

The constitutional treatment of patients with phlyctenular ophthalmia is of the greatest importance, for without it a recovery is attained with difficulty and is not likely to be permanent. Too many of the cases have been obliged to live in poorly ventilated and lighted houses. With the advent of the ophthalmia, the previous bad habits in this respect are insisted upon even more strenuously, under the mistaken notion that light and fresh air are detrimental. The physician then should require that the patient be out in the open air as much as possible, care being observed that there is no exposure to strong wind or direct glare of the sun. The diet should be generous but plain. The ordinary meats and vegetables, properly cooked, milk, eggs and fruits, should furnish its main constituents. Eating between meals should be positively forbidden; nor should the patient be permitted to partake of sweets, pastries, etc. Special attention should be paid to the digestive apparatus, and the bowels should be made to act regularly each day.

Cod liver oil is a most valuable reconstructive. Fortunately, children, who are the main sufferers from this malady, do not dislike this way of taking fat. The dose should range from one drachm to one-half ounce three times daily.

Internally, *Arsenicum album*, *Mercurius corrosivus*, *Sulphur*, *Hepar*, *Calcarea carb.*, *Calcarea iod.*, *Ferrum iod.*, *Arsenicum iod.*, and *Rhus* will be found useful according to symptoms and constitutional conditions.

Locally, the best treatment is the dusting of fine Calomel powder over the affected eyeball once daily by the physician. This is accomplished by first dipping a camel's-hair brush into the powder; the handle of the brush is then held between the thumb and second finger of the right hand, the fingers of the left hand being occupied in holding the lids separated. A quick blow on the brush handle with the free first finger of the right hand is sufficient to lodge a sufficient portion of the Calomel over the affected eye.

For home use the patient may be given the Yellow Oxide of Mercury ointment of the strength of one grain to the drachm of Vaseline, a piece of which the size of a pin-head is placed inside the eyelids at bed-time.

In case of marked photophobia, the pupil should be dilated with Atropia, and the case directed to use "smoked" glasses. The strength of the Atropia should be from one to four grains to the ounce, and the instillations should be repeated three times daily. The strength of the Atropia solution will be governed by the age of the patient, the effect on the pupil, and the severity of the lachrymation. When there is a profuse flow of tears, its diluting effect calls for stronger solutions of Atropia.

Membranous Conjunctivitis.

Membranous conjunctivitis is hardly to be looked upon as a special clinical entity, but rather as a stage of some other conjunctival disease. Reference has been made in previous pages to the formation of a membrane on the palpebral conjunctivæ in purulent ophthalmia. A similar condition appears after the application of the jequirity bean for the treatment of granular lids. It may also appear in other inflammatory diseases of the eye, when they have been treated injudiciously by too strong solutions. It is also a well-established fact that a depraved constitutional state encourages the membranous formation.

The treatment of membranous conjunctivitis, then, is obvious. The local applications should be of the mildest possible character, as Mercuric chloride (1 : 10,000) or Boric acid (grs. x- $\bar{3}$ j). Local conditions may, of course, indicate Atropia.

The constitutional state of the case must also be treated, and remedies directed against any underlying dyscrasia, as hereditary syphilis, tuberculosis, etc., while the patient should be placed under good hygienic surroundings.

Diphtheritic Conjunctivitis.

Rare as is diphtheritic conjunctivitis it is possible for any physician to be one of the few to meet with it; hence, the necessity of referring to its treatment in a work like the present. The important therapeutic agent is the Diphtheria Antitoxin, which should be given without hesitation; 5,000 units represents about the proper initial dose.

Local treatment, while subordinate, is nevertheless of importance. It includes the application of mild, soothing collyria, as Boric acid (grs. xx- $\bar{3}$ j), Sodium bicarb. (grs. v- $\bar{3}$ j).

The regulations for the prevention of the spread of the disease are as important as in the case of faucial diphtheria. In addition, we should, if but one eye is involved, adopt the precautions recommended under purulent ophthalmia for the prevention of the spread of the infection to the sound eye.

Follicular Conjunctivitis.

This disease requires about the same local measures as are indicated in catarrhal conjunctivitis, *viz.*, Boric acid, weak Bichloride solution (1 : 8,000), and Argylol (2 per cent. to 5 per cent.).

It sometimes proves to be very resistant to treatment, in which case massage of the conjunctiva with Boric acid ground to an impalpable powder is of value.

Internal medication and general hygienic measures are indicated according to constitutional and local conditions.

Trachoma.

Granular lids.

Prophylaxis.—Trachoma is a specific contagious disease, which can originate in the carrying of the infection from the diseased eyes to healthy ones through the medium of handkerchiefs, towels, and close personal contact. While overcrowding, bad hygienic conditions, etc., favor its spread, the disease cannot originate unless direct infection takes place as above indicated. It is important then that patients with granular lids be carefully instructed as to the ways in which they may endanger others, particularly the members of their own families, by carelessness in personal hygienic details.

While the therapeutic measures essential for the cure of granular lids are well recognized, the results are by no means brilliant. Cure is difficult in the best of cases, relapses take place readily, and the affected eyes are too frequently left in a permanently damaged condition.

Treatment.—Careful hygienic measures, including fresh air, good food, cleanliness, and constitutional remedies are most important.

Locally, we may use Copper Sulphate crystals applied gently to the affected surface on the everted lids every two or three days; or, in the same way, Silver Nitrate solution (1 per cent. to 2 per cent.), or Argyrol (25 per cent.).

In the follicular or succulent variety a very useful mechanical measure is the roller forceps of Knapp for expressing the contents of the follicles. This procedure is somewhat painful; hence, it should be preceded by applications of Cocaine solution to anesthetize the eye, or a general anesthetic may be required. The lid is then everted, and the cartilage is grasped between the forceps blades, one over the conjunctiva and the other in the retrotarsal fold. The expression is made by gentle traction with moderate pressure of the forceps blades.

In the treatment of the common mixed variety of granular lids at my clinic in the Hahnemann Hospital, all other local methods have been abandoned in favor of massage of the conjunctival lid surface every one to three days with powdered Boric acid on the end of the index finger. Aurum or Mercurius corrosivus is given internally.

Dionin 5 per cent. to 8 per cent. solution has been found valuable at times in clearing away the pannus.

In cases of obstinate pannus, the induction of a purulent ophthalmia by the application of the jequirity bean is occasionally practiced. The procedure is not devoid of danger; hence, should never be tried by the general practitioner.

Vernal Conjunctivitis.

(*Spring catarrh*).

All treatment thus far suggested for this affection has proven very unsatisfactory. *Nux vomica* and *Sepia* internally are said to be useful. Locally, the most efficient remedy is *Adrenalin chloride* (1:1000). Experience seems to show that it shortens the attack. We may also employ Boric acid and Zinc sulphate solutions, as in catarrhal conjunctivitis.

Toxic Conjunctivitis.

This is almost always brought about by the injudicious use of local applications, as Atropia, Eserine, etc. In some instances it is the result of the idiosyncrasy of the patient, the eyes being highly irritated no matter what drug may be employed. The treatment consists in the recognition and removal of the cause, and the application of weak solutions of Boric acid (grs. x- $\frac{5}{j}$) three or four times daily.

Subconjunctival Ecchymoses.

While subconjunctival hæmorrhage is a condition which commonly alarms its victims, it is, nevertheless, a harmless affection, which usually disappears spontaneously in the course of a few days, or at the most a couple of weeks.

If there is a sensation of soreness *Arnica* should be prescribed.

Hot compresses to closed lids and collyria of Boric acid will hasten absorption.

Œdema of the Conjunctiva.

This is a symptom of a variety of affections, and, as a rule, requires no special therapeutic measures. There are times when it is sufficiently severe to demand special consideration, in which case the effusion may be drained away through a small conjunctival incision, and *Apis* or *Arsenicum* given internally. In most cases the treatment is directed to the cause of the œdema.

Pterygium and Pinguecula.

These lesions are not influenced in the slightest degree by any medical treatment. Special surgical operations for their excision and prevention of their return are necessary.

DISEASES OF THE CORNEA.**Ulceration and Abscess of the Cornea.**

An eye at the seat of corneal ulceration should be carefully examined to determine the presence or absence of primary lesions, as foreign bodies, conjunctivitis, blenorrhœa of the sac, stricture of the lachrymal duct, deformities of the lids, and irregular growth of the eyelashes, etc. If present, they must be treated.

It is the rule to find the subjects of corneal ulceration to be in poor general health; hence, the value of general constitutional treatment is not to be questioned. This includes attention to the general principles of hygiene, as ventilation, etc., good food and proper internal medication. While exposure to a glare of light is bad, it is equally wrong to keep the patient for long periods in a dark room. As regards diet, the most important thing is to have the patient partake freely of the staple articles of food, while sweets of all kinds, pastries, etc., are positively forbidden. Cod liver oil and other easily digested fats are valuable adjuvants.

The special constitutional dyscrasia to be considered as having a practical bearing on the treatment include syphilis (hereditary or acquired), malaria, gout, rheumatism, diabetes, and tuberculosis. The depreciating effect of chronic renal disease and digestive disturbance must also be kept in mind.

In the acute stage of corneal ulceration, the most important local measures are as follows: Frequent irrigation of the eyeball with weak Bichloride solution (1:5000 or 8000); hot fomentations of Boric acid solution or Soda bicarbonate solution for ten to twenty minutes at a time and repeated every one to four hours; during the intervals between the irrigations, a wet compress and bandage should be applied to the closed lids with moderate pressure, providing there is not much conjunctival discharge. It must be borne in mind that the bandage is *always* contra-indicated when there is a free discharge from the eyes.

Atropia should be instilled in sufficient strength and as frequently as may be necessary to keep the pupils well dilated. The strength required is usually from one to four grains to the ounce of water.

To relieve the photophobia, a useful remedy is *Holocain* applied in the strength of one to two grains to the ounce of water every three hours. This drug is also advantageous in that it favors healing of the ulceration. Cocaine should never be used in corneal ulceration, even though it does exert a marked temporarily palliative effect. Its repeated use is positively harmful on account of its desquamative effect upon the corneal epithelium.

All solutions used in the local treatment of corneal ulcerations should be kept sterile, lest infection of the ulcer by them aggravate existing conditions.

When an ulcer is situated at or near the margin of the cornea, and threatens perforation, a miotic should be used, the one most commonly employed being Eserine in the strength of one to two grains to the ounce. This latter drug should not be used unless the indications for it are clearly defined, as it produces a congestion of the ciliary body and iris. To avoid this untoward effect, some authorities have recommended the use of Atropia once each night.

Quite *hot* salt solution (temp. 150° F.) falling drop by drop from a pledget of cotton often has a beneficial effect.

A most useful local remedy in foul ulcers is finely powdered Iodoform dusted on the cornea with each change of the compress or bandage.

When, despite the above-described treatment, the ulceration continues to spread in depth or surface, more energetic local measures are necessary. When making the applications about to be recommended the reader should remember that the lesions are always small, and the surrounding structures are sensitive to maltreatment or to any treatment whatever. This being the case, all applications should be made with care, and the drug selected should have its action limited exactly to the part which is to be treated. Careless applications which permit the inundation of the cornea with this or that drug are not to be countenanced. To insure a proper application, a finely-pointed probe should be selected, and its tip nicely and firmly wound with a few fibres of absorbent cotton. This is a very easy thing to do. A probe thus prepared will take up but the fraction of a drop of the medicament selected, and if the operator is careful not to permit a hanging drop to adhere to it, and has a steady hand, the medication can be confined to the desired spot without any difficulty. The first drugs to be selected for this treatment are Alcohol or tincture of Iodine, either of which may be applied to the floor of the ulcer every one to three days.

If the ulceration still proves intractable, and is disposed to spread over the surface of and into the depth of the cornea, the foul surface should be well curetted and then touched lightly with pure Carbolic acid, care being exercised that none of the acid flows over the surrounding clear cornea.

In some cases the application of the actual- or galvano-cautery may be required. This measure is one, however, which should be limited in its practice to skilled hands in the possession of men of good judgment.

When perforation threatens, the anterior chamber should be tapped through the base of the ulcer.

The most important remedies are *Mercurius corrosivus* and *Hepar* in cases of foul ulcers destroying the depths of the cornea, and *Arsenicum* and *Chininum arsenicosum* when the ulcers spread superficially.

Dionine locally in from 5 per cent. to 8 per cent. solution often has a beneficial effect, particularly in the stage of regression, in hastening the absorption of the exudate and lessening the density of the resulting scar.

Massage with Yellow Oxide of Mercury ointment and the insufflation of Calomel are also of service for the same purpose.

If perforation takes place, with prolapse of the iris, the protruding portion of the latter should, as a rule, be removed.

Pus in the anterior chamber (Hypopion) should, as a rule, be let alone. Experience has taught that its evacuation is, in the majority of instances, an important cause of a succeeding necrosis of the cornea.

Abscesses of the cornea are best treated medically and by medical applications, as in ulceration. When, however, they show a disposition to

spread laterally, without any prospect of pointing, they should be incised, after which the case should be treated as one of ulceration.

Neuropathic Keratitis.

(*Neuropathic ophthalmia.*)

Under this heading is included a form of ulceration of the cornea following disease or injury of the trigeminus resulting in anæsthesia of the cornea. The old idea that the phenomena are the result of the withdrawal of a trophic influence has been abandoned, and it is now generally admitted that the condition depends upon diminished secretion and the influence of external irritants. The treatment includes that already recommended for corneal ulceration together with the application of Buller's shield, or the stitching of the lids together. The prognosis under the best of management is unfavorable.

Interstitial Keratitis.

Interstitial keratitis is always the result of hereditary syphilis. The treatment must, therefore, be directed against that dyscrasia, and consists of the judicious use of *Mercury*, *Potassium iodide*, *Aurum muriaticum*, and *Sulphur*. In many cases the inunction treatment with Mercury is the best. One drachm of Mercurial ointment should be rubbed into the skin, as directed in the article on the treatment of syphilis, once daily. This measure should be continued until the first evidence of constitutional effect of the Mercury is observed. Then it should be discontinued. Most cases do better on Potassium iodide in doses of from ten to twenty grains three times daily after meals, with Sulphur or Aurum before meals.

Warm fomentations should be applied to the eyes from ten to twenty minutes three times daily, followed by the pressure-bandage for an hour or two, with an occasional hot-pack at night.

If the eyes are irritable, Atropia should be instilled and dark glasses used.

In the late stages of the disease, massage of the cornea with the ointment of the Yellow Oxide of Mercury (gr. i to 3i) and instillation of a 5 per cent. to 8 per cent. solution of Dionine will favor the absorption of the exudate.

Sub-conjunctival injection of physiological salt solution will at times hasten the absorption of opacities.

Corneal Opacities.

Old opacities are not amenable to any form of treatment.

Deposits from recent inflammation may be thinned by massage with the Yellow Oxide of Mercury ointment, rubbing the cornea through the closed lids with the tips of the index and middle fingers. To make sure that the cornea is under the finger tips, the patient should be instructed to look downwards during the manipulations.

Instillation of Dionine and the sub-conjunctival injection of normal salt solution are of service in recent cases.

In hopeless opacities, the white scar tissue may be rendered less unsightly by tattooing it with India ink.

If the opacity is situated immediately over the pupil, and renders the eye sightless, useful vision may be obtained in some cases by the production of an artificial pupil opposite a clear portion of the cornea.

Keracotonus.

(*Conical Cornea.*)

This lesion is one which should be treated by specialists only. In some few cases a fair result can be obtained by the adjustment of a combination of sphero-cylindrical lenses.

The progress of the disease is said to be stopped in rare cases by the local use of Eserine sulphate and the pressure-bandage.

Finally, when all other measures fail, operation may be resorted to; but the results are by no means all that can be desired.

Staphyloma Cornea.—Staphyloma corneæ in the early stages, before the dense cicatrization has taken place, may be reduced in size by repeated paracentesis and careful and continuous use of a pressure-bandage. When this is of no avail and the disfigurement is pronounced, the projecting mass may be obscurd, but the most satisfactory treatment is the excision of the eyeball and the adjustment of an artificial eye. Where the staphyloma is but partial, very occasionally the blemish can be lessened and the vision improved by an iridectomy, but this is only feasible where the anterior chamber is still present.

Scleritis and Episcleritis.

The local treatment of scleritis and episcleritis consists of the frequent application of hot fomentations and massage. The massage is performed with the Yellow Oxide of Mercury ointment and is particularly applicable in chronic cases. Instillations of Atropia are useful for the relief of pain. The wearing of dark glasses is of distinct benefit when there is much photophobia. Dionine at times hastens absorption.

When, in chronic cases, there is plainly no evidence of iritis, Eserine (gr. $\frac{1}{4}$ to gr. $\frac{1}{2}$ – $\frac{3}{4}$) and Pilocarpine, double the strength, are useful. Severe and intractable cases demand the supervision of the oculist.

The hot wet-pack at night and Turkish baths have proven of value. Constitutional treatment is necessary. The medicines which have proven valuable include *Potassium iodide*, *Sodium salicylate*, *Colchicine*, *Rhus tox.* and *Bryonia*.

DISEASES OF THE IRIS.

Iritis.

It is very important that the patient be confined to his bed for the first ten days of the attack. The room should be darkened, or the eyes protected by the wearing of dark glasses. The diet should be spare, and care should be taken that the bowels are moved regularly.

The most important step in the treatment is the early dilatation of the pupil with Atropia or other equally efficient mydriatic. The Atropia is, however, the most reliable. This remedy is necessary in order to prevent adhesion between the iris and the lens capsule, or, if these have already taken place, to break up said adhesions (posterior synechiæ). The solution used should be of the strength of four grains to the ounce, and one drop should be instilled every ten minutes for the first hour to secure wide dilatation. After this period has elapsed, the mydriatic effect may be maintained by instillations every three to five hours. Hot fomentations used at the time of the instillations and for a few minutes afterwards will increase the action of the mydriatic, as will also a drop or two of Cocaine (4 per cent.) solution. Recently, Dionine (5 per cent. to 8 per cent.) has been used as a collyrium with Atropia to augment the action of the latter and lessen the pain.

Pain may also be controlled by the use of dry or moist heat. Cold applications are badly borne, excepting in traumatic cases. Occasionally it is necessary to resort to an analgesic, *e. g.*, Morphine hypodermatically.

When Atropia is used so freely as just recommended there is some risk of causing symptoms of poisoning as the result of the drug reaching the throat by way of the lachrymal passages. To prevent this, pressure should be made upon the lachrymal punctum with the finger at the time of the instillation, or the patient's head may be inclined to the temporal side.

When broad adhesions do not give way after a reasonable period, the Atropia should not be pushed further, but used in moderation. Throughout the course of the treatment the intraocular tension should be carefully watched, as such free use of Atropia may precipitate an attack of glaucoma when there is a predisposition thereto. This is most likely to occur in the so-called serous iritis or cyclitis, where the pupil does not contract, as in the plastic form.

Constitutional treatment is of the greatest importance. In the syphilitic cases we should prescribe *Mercurius iod. rub.* 1x or the *Mercurius protiod.* 1x. *Mercurius corrosivus*, *Aurum*, *Kali hyd.*, and *Asafetida* are also useful. Sometimes it is necessary to resort to mercurial inunctions.

In the rheumatic type of cases, the internal remedies include *Aconite*, *Gelsemium*, *Bryonia*, *Rhus*, *Clematis*, and *Sodium salicylate*.

In the traumatic cases, *Aconite*, *Rhus. tox.*, *Arnica*, *Hamamelis*, *Cedron*, and *Mercurius*.

Sympathetic Ophthalmia.

(*Irido-cyclitis*.)

Preventive or prophylactic treatment is the only satisfactory means of combating the disease, and consists in the enucleation of the eye causing it.

Every eye blind from injury and showing an irido-cyclitis is liable to cause a destructive irido-cyclitis in its companion, and should be removed without delay. The only exception to this rule would be the presence of useful vision in the exciting eye. In such a case, the question may become extremely difficult of decision. But even when the exciting eye still sees, if it contain a foreign body that has resisted well-directed efforts at extraction and shows an irido-cyclitis, it should be removed promptly.

If actual inflammation be present already in the second eye, the effect of enucleation is so uncertain that, as a rule, operation should be avoided, for very often after the disease has run its course it will be found that the second or sympathizing eye has suffered greater damage than the exciting one.

The treatment of sympathetic inflammation is that of irido-cyclitis and iritis in general.

Panophthalmitis; Suppurative Choroiditis.—After this is once established nothing can be done to preserve vision or, indeed, to arrest the suppurative process. The important matter is the control of the pain by hot fomentations and anodynes, and either the early release of the pus by free incision into the ball at the lower part of the cornea and sclera, or the excision of the eyeball. The former procedure is preferable for the average general practitioner. The danger of involvement of the brain in suppurative meningitis from infection through the lymph channels has probably been exaggerated as an objection to the operation of enucleation, and really early removal of the ball furnishes the promptest relief from suffering and most rapid convalescence.

In all diseases posterior to the iris local measures are of little avail. The outcome depends upon the treatment of the causal systemic condition.

Of importance are: Rest of eyes, avoidance of bright light, wearing of dark or amber glasses and, where the eyes are to be used, the careful adjustment of the refraction. Some recent reports would indicate that instillations of Dionin, 3 to 8 per cent. aqueous solution, may cause absorption of inflammatory exudates in the vitreous choroid and retina through its stimulating action on the lymphatics.

Glaucoma.

In most cases of glaucoma, operative treatment is required to check the disease, and while it is most efficient in the inflammatory varieties it may prove useful in any form.

Medicinal treatment is useful only in tiding over periods during which operation cannot be done, or when operation is contra-indicated or declined.

In acute cases, a myotic, preferably Eserine (grs. ij to iv- $\bar{3}$ j), should be instilled every two to three hours, or sufficiently often to cause marked contraction of the pupils. Unless this is accomplished it gives no good results.

Morphia may be used hypodermically to produce sleep, relieve pain, and assist in the pupillary contraction.

A saline or Calomel purge is useful to unload the portal system.

In the chronic inflammatory and simple non-inflammatory varieties, the pupil should be kept contracted by a milder solution of Eserine than above indicated in lieu of operation or until operation is decided upon.

Freedom from worry or nervous shock, loss of sleep, avoidance of overuse of the eye, avoidance of dissipation in drinking or eating, and of constipation are most important.

All mydriatics tend to produce glaucoma when there is a predisposition thereto; hence, they should always be used with caution in patients who have passed middle life.

The remedies of possible service in glaucoma include *Gelsemium*, *Bryonia*, *Cedron*, and *Prunus*.

Cataract.

When cataract is associated with certain constitutional disturbances, carefully selected remedies may exert an influence in retarding the development of the opacity.

In the early stage, when the cataract accompanies a choroiditis, Bright's disease, or diabetes, attention to the general health may be of service in retarding its development; but no specific or local remedy is of any avail; and there are no signs in the eye or the lens that would lead to the selection of a remedy.

The accurate adjustment of refraction and muscular error is an important matter.

When the opacity is mainly central, vision may be much improved for a time by the use of a weak mydriatic (Atropia, gr. $\frac{1}{8}$ - $\bar{3}$ j) which uncovers the still unclouded lens periphery.

In stationary cataracts (lamellar) sufficient vision for carrying on an occupation has thus been secured, and no harm has come from such use of a mydriatic for years.

With the loss of useful vision, the question of extraction comes up, and this is one which must be settled by the oculist.

Disturbances of Motility.

The treatment of the concomitant squint or strabismus can hardly be begun too early. Even with children two or three years of age presenting a periodical squint it is usually possible to prevent the squint becoming either constant or monocular by the adjustment of a glass which will correct the causative refractive error, or, if the child be too small to wear the glasses, the accommodation should be paralyzed by daily instillation of Atropin, one or two grains to the ounce. The use of the eyes at near range should be restricted as much as possible.

When the squint is already constant and monocular, in addition to the use of a cycloplegic, or a correcting glass, or both, the fixing eye should be covered for several hours daily, in order to force the deviating one into use, and thus at least convert the squint into an alternating one.

This may have to be kept up for weeks or months at a time before anything like parallelism is established, and it is only in those cases when the vision of the squinting eye is not greatly impaired that one can expect to secure an entire disappearance of the squint and the establishment of a binocular single sight, which is the ideal result. The adjustment of a glass for refractive error on very young children can, of course, only be accomplished by the use of the ophthalmoscope, either directly or through the shadow test.

When in addition to the wearing of a correcting glass the pupils are kept continuously dilated, a second pair of plain smoked glasses should be worn over them, or the lenses be ground out of smoked glass.

Stereoscopic exercises for the development of the fusion faculty are often attended by brilliant results where the vision of the squinting eye is not greatly depreciated. The stereoscopic fusion pictures of Kroll and of David Wells with the Worth's stereoscope or so-called amblyoscope are the most useful.

Unless the squint be excessive, operative measures for its correction should not, as a rule, be carried out earlier than the ninth or tenth year, as there is a decided tendency for squint to spontaneously lessen or disappear as the child approaches adolescence.

Squint of the spasmodic variety, for example, that associated with intestinal or cerebral irritation, may be relieved by remedies of which the most important are *Cicuta*, *Cina*, *Jaborandi*, *Spigelia*, *Agaricus*, *Belladonna*, *Hyoscyamus* and *Stramonium*.

The treatment of **squint from ocular paralyses** will depend more or less upon the cause of the palsy, although this may be at times difficult to determine. In any case, the resulting double vision, nausea, vertigo, etc., can and should be relieved by the wearing of a shield or ground glass in front of the deviating eye, thereby excluding it from use. The employment

of prisms for fusing the double images can only be of service in exceptional cases of a mild type.

Probably the most important internal remedy for ocular paralyses, even though they be not syphilitic in origin, is the *Iodide of Potassium* in material doses. *Nux vom.*, *Rhus*, and *Causticum* are also at times beneficial, particularly in the peripheric varieties following exposure to cold or dampness, and in the paralytic squint following diphtheria, *Gelsemium* has been found useful.

Electricity though highly praised by some is very uncertain in its action, and should never be employed in the earliest stages. The negative pole is to be placed over the paralyzed muscle and the positive at the temple or occiput. Two or three milliamperes of the constant current are usually employed.

The **latent squint, insufficiencies or so-called heterophorias**, with their attendant asthenopic symptoms, cannot always be satisfactorily treated *per se*, but will require critical attention to the possible causative constitutional or nervous disorders, the careful adjustment of refractive errors, the symptomatic use of drugs, and galvanism ; but the systematic exercise of the individual extraocular muscles with prisms etc., and, finally, as a last resort the operations of tenotomy and advancement of the ocular muscles may be found at times of signal service.

CHAPTER XXVIII.

DISEASES OF THE EAR.

By CHAS. M. THOMAS, M. D., Professor of Ophthalmology and Otology in the Hahnemann Medical College of Philadelphia.

Eczema of the External Ear.

WHILE to all appearances eczema of the auricle and auditory meatus may be a local affection, nevertheless it is like all eczemas in that there is practically always some constitutional disease or an auto-intoxication at its foundation. In its treatment, therefore, we must follow the precepts laid down for the general management of eczema, including attention to the diet, regularity of bowel function, fresh air, exercise, water drinking, etc.

In the dry form, scales should be cleaned away by applications of Olive oil, after which the parts may be treated with ordinary Zinc oxide ointment.

In the case of acute eczema with watery discharge, the best application is a dusting powder composed of equal parts of Boric acid and Zinc oxide.

It should be remembered that soap and water are poisonous as in all eczemas ; so the less they are used for cleansing purposes the better.

Otitis Externa Diffusa.

The first step in the treatment of diffuse external otitis is the thorough cleansing of the external canal by repeated instillations of *Hydrogen peroxide*. This completed, we should make further instillations of a saturated solution of Boric acid in Alcohol. We should then dry the parts *gently* but thoroughly and insert a *light* pack of Borated or Iodoform gauze into the auditory canal. This should be renewed once or twice in the twenty-four hours.

When the discharge has been about controlled, the local treatment should be changed to the thorough anointing of the canal with the Yellow Oxide of Mercury ointment of the strength of two grains to the ounce of Vaseline.

The internal remedies are *Arsenic*, *Hepar*, *Petroleum*, *Thuja*, *Mercurius corrosivus*, and *Tellurium*.

Acute Circumscribed Otitis Externa.

(*Furuncle of the external canal.*)

The auditory canal should be thoroughly cleansed by instillations of Hydrogen peroxide and gentle syringing with sterile water or weak Bichloride (1 : 5000) solution. The canal should then be filled with a tampon soaked in a solution of Carbolic acid in Glycerin (gr. xxx to 1 : 3j). Hot applications may then be made to the ear, the best being the hot salt or hop-bag, hot flannels, and the Japanese fire-box. Internally, the patient should receive at this stage *Belladonna*, every half-hour to an hour.

If in the course of twenty-four to forty-eight hours pointing takes place an incision should be made. Even though the operator fails to find pus, the incision will be beneficial because of the local depletion it causes. The operator should avoid cutting over an extensive area ; at the same time he must take care to carry his blade deep enough to find pus if it is present. At this stage, *Hepar* 1x to 3x every hour is the remedy.

To prevent recurrence of the furunculosis the canal should be treated by gentle syringing or mopping with weak Bichloride solution (1 : 5000) daily for two weeks after recovery. *Calcarea picrata* is said to be of some use in preventing recurrence.

Inspissated Cerumen.

Physicians may obtain credit or discredit by the methods they pursue in removing inspissated cerumen from the external canal. The details involve softening of the cerumen, the protection of the patient's clothing and the syringing.

The hardened wax may be rendered soft and its removal facilitated by instillations of *Hydrogen peroxide* shortly before syringing.

To protect the patient's clothing, clean towels should be tucked around the neck to cover the shoulders.

To catch the water as it flows out of the ear, a specially adapted pus basin made of agate ware or tin is useful, and some advocate a specially constructed ear spout with waste pipe with wire loop so that it can be hung on the ear, but an ordinary small bowl or basin will answer every purpose.

The present offers a good opportunity for describing the technique and instruments for

Syringing the Ear.

To protest against the syringing of the ear where there may be nothing to be removed would seem superfluous if not ridiculous, and yet I know that it is not uncommon practice for physicians to direct patients complaining of deafness, itching, etc., to syringe or have the ear syringed, and that without even an attempt to inform themselves as to the actual condition of the parts.

Such practice is not only senseless, but may be distinctly harmful to the hearing apparatus. This little operation is not the perfectly innocent procedure that some seem to think it is, and should, as any other therapeutic measure, be applied only under definite and positive indications and the ocular evidence of the presence of a foreign substance in the canal or drum.

A common fault in syringes of every form lies in the large size of the nozzle lumen; the stream for syringing to be efficient should not come from a larger opening than $1\frac{1}{2}$ to 2 millimeters. A small-sized stream will insinuate itself between the canal wall and foreign body, where a large one may push the substance further in.

In order to secure an efficient return flow of the water in syringing, it is most important that the stream be directed with carefully graduated pressure against and along the *upper back wall* of the meatus, the canal at the same time being straightened as well as possible by gently pulling the pinna with the fingers of the left hand upward and backward. Care should be exercised that the vessel for catching the return fluid, and usually held by the patient against the side of the neck, be not pushed upward so as to close the meatus.

As to the fluid to be used in syringing, I believe the most satisfactory for the ordinary case is a blood-warm solution of Sod. bicarbium or Sodium chloride, a teaspoonful to the pint. The only occasion in which an antiseptic is required is when there is a purulent offensive discharge, in which case the instillation of H_2O_2 followed by syringing with Potassium permanganate, 1 to 5,000, will be found most serviceable.

The removal of impacted cerumen is much facilitated by the instillation of Hydrogen dioxide a few minutes before syringing.

The first desideratum in an ear syringe is cleanliness. If a piston syringe be used, it is preferably made of glass with a packing to the piston of a material that may be boiled without injuring it (asbestos or rubber). The ordinary leather plunger is not clean and cannot be made so.

An objection to the piston syringe is that if the nozzle is olive-shaped (as it commonly is) it cannot be introduced well into the canal as occasionally may be required, and if the nozzle is pointed and hard (metal or hard rubber) it may do damage to the meatal walls.

I have known a number of instances where from the unexpected slipping of the finger on the barrel, the nozzle point has been driven through the drum-head. A piston syringe, when not in use, should be kept filled with carbolized water or other antiseptic.

Personally, I prefer in ordinary cases the soft rubber ball syringe with flexible nozzle, which is sold in the shops in two sizes. Its soft, slim nozzle may be introduced well into the canal and can hardly do harm to the canal or drum, even in unskilled hands, and can without damage to it be

made perfectly clean by boiling, as often as may be found necessary, which should be after each time it is used in cases of suppuration.

It must not be forgotten that vertigo, vomiting, and even prolonged syncope may follow the use of fluid too hot or cold or injected with too great and sudden pressure. Such symptoms are most apt to occur if the patient is allowed to stand during the treatment.

A rule rarely to be departed from is that the syringe is not to be used to remove blood clots from the canal after an accident for fear of washing septic material through a ruptured membrana tympani into the drum cavity or deeper.

Foreign Bodies in the External Meatus.

The removal of foreign bodies from the external meatus should always be undertaken with gentleness and with a full understanding of the nature and position of the offending substance. Forcible instrumental measures—indeed, I might say any instrumental measures other than gentle syringing—should never be attempted by the general practitioner, for it is a very easy matter to do great damage by unskillful instrumentation in the external auditory canal. Inflammation and swelling are thus excited and the foreign body becomes impacted, and then its removal is a problem which tries the mettle of the most skilful.

If no bungling attempts have been made to extract the body it is usually found lying in the canal. In this case the simple device of straightening the canal by lifting the pinna upwards and backwards and gentle syringing with warm water secures its prompt removal.

Many of these cases, indeed, most of them, occur in children. Their natural nervousness and dread of the surgeon frequently lead to struggling or opposition to the necessary manipulations. Rather than run the risk of impacting the foreign body or injuring the canal by a false movement, it is better by far to anæsthetize the little one before proceeding with the syringing.

Should the foreign body be a live insect, it is a good plan to destroy it by preliminary instillation of oil.

When the syringe fails we may resort to delicate forceps or small blunt hooks; but it should be remembered that with these it is a very easy matter in the hands of the unskilled to push the body still further into the canal.

Rather than use these instruments it will be better to adopt a very old device, that of dipping an ordinary camel's-hair brush in a rapidly-drying glue, placing the same in contact with the foreign body until it has become firmly adherent and then make traction.

When all these measures fail, it may prove necessary to proceed to the heroic procedure of detaching the pinna and posterior portion of the cartilaginous portion of the canal to get at the foreign body.

Thiosinamin has been recommended of late as a remedy for chronic catarrhal deafness, and some benefit has been claimed from it. My own experience, which, however, has been limited to but a few cases, does not inspire me with much enthusiasm as to its value.

Acute Otitis Media.

The above title to this section is used intentionally, so that we may include herein the consideration of the treatment of both catarrhal and suppurative otitis media, as the principles governing the treatment of the one apply also to the other. Of course, suppurative otitis media is the more serious of the two, and demands the greater care for its cure. In the treatment of otitis media we have to consider not only the cure of the acute illness, but the prevention of permanent damage to the auditory apparatus. For the latter reason particularly we should be very stringent in enforcing our directions.

In all cases, the patient should be sent to bed, and kept there until active symptoms have subsided.

The general condition will be much improved by the administration of a saline purge, as Magnesium sulphate.

Unless the symptoms call distinctly for some other remedy, we should prescribe *Belladonna* to be administered at short intervals. Other remedies which may be indicated include *Aconite*, *Ferrum phos.*, and *Chamomilla*.

To relieve pain, we may use hot applications, preferably, however, the hot-water bottle or the Japanese fire-box, care being taken to wrap them in flannel and watch them closely lest we produce burns of the cutaneous surface. It is seldom if ever that cold applications are beneficial in this condition, either in relieving pain or subduing local inflammation.

A most excellent local application is Carbolyzed glycerin of 10 per cent. strength. This should be prepared from the white crystals only. Instilled after well warming every two or three hours it relieves the pain, and by osmosis through the membrana tympani aids greatly in the absorption of the exudate. Moreover, by rendering the auditory canal antiseptic, it puts the parts in condition for paracentesis of the membrana tympani should that operation be found necessary.

Anodynes must be regarded as not holding any important place in the therapy of acute otitis media. A single dose of Morphia, graduated according to the age of the patient, *may* be given the first night to secure sleep. *Under no circumstances should it be repeated.* If pain still continues, it should be regarded as an indication for active interference, in all probability a demand for paracentesis of the membrana tympani. *Under no circumstances* should the physician advise the instillation of hot oils, hot laudanum, hot raisins or figs, or mullein oil into the ear. They do but little good, and they may do great harm by introducing a material which may become rancid and so interfere with thorough antisepsis of the parts.

If pain is relieved by the above treatment and the process checked, but an exudate remains in the tympanic cavity impairing hearing, such exudation can be sometimes removed or evacuated by way of the Eustachian

tube by Politzer inflation with the head hanging forwards and inclined to the opposite side. The necessary admixture of air with the mucus still remaining in the tympanum will still further aid the absorption. *Sulphur* or *Potassium iodide* given internally will hasten recovery. If the above treatment fails to clear the tympanum after a fortnight's effort, the tympanum may require evacuation by incision through the membrana tympani.

If instead of proceeding to resolution, the inflammatory process and the suffering continue or increase after twenty-four hours—in some cases the urgency is such that we should not wait even this short time—the membrana tympani should be incised as follows: If Carbolized glycerin has been used from the beginning, as advised in the preceding pages, no additional precautions for sterilization of the parts are necessary. If this has been neglected, we may best clean the parts surgically by thoroughly rubbing the walls of the canal with a cotton-covered probe saturated with Hydrogen peroxide, and follow this by instillations of saturated solution of Boric acid in alcohol. In the case of children, it is practically always necessary to administer a general anæsthetic. When general anæsthesia is not used the operation may be made painless by placing against the membrane a small pledget of cotton wet with pure Cocaine, Carbolic acid (white crystals) and Menthol, *equal parts of the crystals*. To secure its full anæsthetic effect *this should lie for fifteen minutes directly in contact with the membrana tympani*.

I find the most effective knife is one made like a small pointed tenotome. The blade should be as thin as possible consistent with the necessary strength, and have a keen point and edge; whether the shank be straight or set at an angle is of no consequence.

With the patient in the recumbent posture, as he will be under an anæsthetic, the relative position of the parts at the lower end of the canal is so disturbed to one who is not accustomed to frequent examinations with the speculum as to make it important in such an operation as a paracentesis to elevate the patient's head for the moment required by the operation in order to properly locate the incisions.

The most efficient incision, *and it should be a cut and not a puncture*, is one reaching from the upper posterior edge of the membrane down to the lower rim and thence running several millimeters forward, forming thus a flap of the posterior lower segment.

It is imperative that it be made quickly but with precision, the eye following each movement of the knife.

Damage to the intra-tympanic structures is hardly possible in making the cut, and if in inflammatory cases the opposite bony wall of the tympanum is felt with the point of the knife so much the better, a depletion of the tympanic mucous membrane being desirable.

If the case be one of suspected suppuration of the attic with conges-

When the discharge is not very profuse, we may insufflate Boric acid, or one part of Iodoform to two parts Boric acid, in impalpable powder after drying the cavity. We should never resort to packing of the canal, as we may by this practice cause retention of secretions.

The Politzer inflation and the Siegel suction speculum assist in emptying the tympanum and Eustachian tube of the discharges.

Cleansing with the syringe may be required several times daily in some cases. Usually once daily, and that by the physician and under good illumination, is required.

When granulations are profuse or polypoid in character, we should use absolute alcohol instillations several times daily, although curettage may be necessary. At times, these means failing, a light packing of the cavity of the tympanum and canal with Iodoform or borated gauze, after cleansing and drying, may succeed in stopping the discharge.

Carious ossicles or tympanic walls may have to be removed by operation though the auditory canal, or the radical operation for cleaning out the tympanum, antrum, and mastoid cells must be performed.

The remedies most useful internally are *Calcareæ carb.*, *Calcareæ iod.*, *Hepar*, *Kali bichromicum*, *Kali hyd.*, *Kali phos.*, *Mercury*, *Silicea* and *Tellurium*.

Mastoiditis.

The first and most important step is to make sure that the auditory canal is aseptic and the drainage from the tympanum satisfactory. To this end freely enlarge the perforation if necessary and follow by douching the canal with weak, hot Bichloride solution every few hours. Unless surgical measures are already called for, the same treatment should be carried out as that indicated in acute suppurative otitis media.

The patient should be kept lying on the affected side to favor drainage, and an ice-bag applied back of the pinna for twenty-four hours. Anodynes should be avoided, and the ice-bag should not be continued longer than about twenty-four hours for fear of masking the symptoms. Other external applications, such as Iodine, blisters, leaches are of no service and only tend to set up undesirable swelling and soreness of the external tissues to no purpose.

Capsicum, *Rhus*, and *Belladonna* may at times be of service in checking the progress of the inflammation.

If pain and tenderness over the mastoid with sagging of upper posterior wall of deep canal persist after a day or two of above treatment, the mastoid should be opened, even though there be no swelling over the bone.

Much greater risk is run by procrastination than by too early operations.

Operation in careful hands is devoid of danger beyond that of the anæsthetic, while timid hesitation may lead to the death of the patient through intra-cranial complications.

Internal Ear.

Our knowledge of diseases of the internal ear and their treatment is still very meagre. Suppurative inflammation incident to middle ear disease should receive the same treatment as that indicated in the causative lesion.

The auditory nerve deafness following meningitis, mumps, and inherited syphilis does not respond to any treatment.

An essential neuritis of the auditory nerve, or hæmorrhagic extravasation, usually from unknown causes, and associated with the well-known Meniere's complexus of symptoms, may rarely be controlled by general hygiene, nourishing diet for the anæmic and low diet for the plethoric, avoidance of over-exertion, abstinence from tobacco and alcohol, and avoidance of mental strain and excitement.

In cases of sudden onset with vertigo, nausea and deafness without particular cause, we may use *Conium*, *Physostigma*, *Cinchona*, *Kali bromatum*, *Quinine* or *Sodium salicylate*.

Cases due to cerebral congestion, with tinnitus aurium, *Hydrobromic acid dilutum*, *Belladonna*, *Veratrum viride*, and *Hamamelis*.

Syphilitic cases, *Mercury* and *Potassium iodide*.

For *presbycusis* or senile deafness, the sclerotic changes in the labyrinth are not amenable to any treatment.

CHAPTER XXIX.

X-RAY THERAPY.

By W. NELSON HAMMOND, M.D., Clinical Instructor in Orthopædics, Hahnemann Medical College of Philadelphia, and X-rayist to the Hahnemann Hospital.

AMONG the many discoveries of the last two decades none has been of more interest and value to the medical world than that of the X-rays by Professor Roentgen.

While at first their greatest usefulness was found to be in the field of surgery as a diagnostic measure, gradually the observations of trained operators have resulted in the recognition of their therapeutic value in medicine. Singularly enough, the use of this remarkable agent is of most service in those diseases in which medicine has heretofore played but little part. The most important advances made latterly have been in the improvement of technique, *i. e.*, length of time of exposure, quality of the rays, and protection to the patient and operator; and it is now a rare occurrence that any untoward effects arise. When such happen they are usually caused by idiosyncrasy.

The effect of the rays upon living tissue is, as Freund has stated, purely local, and he believes that through the destruction of tissue elements certain products arise whose absorption leads to constitutional symptoms. It is still a question what influence the rays have on germs. W. Berham Snow thinks it possible that the bacilli die from the action of the rays upon the tissues and may thus increase the opsonic index of the blood.

The rays acting upon the human body are cumulative and have a dual action, stimulating and destructive. Used in moderate doses a distinctly tonic effect follows; extreme doses produce marked and long-lasting inflammatory changes.

Leucæmia.

It is yet undecided whether the rays act directly upon the blood itself with the development of a leucotoxin, or upon the fixed tissue cells in the part exposed, some changes in these cells setting free a leucotoxin which alters the quality of the blood. We know that they have a marked effect upon the lymphoid tissues and bone marrow, as shown by Heirecke and Buchanan, causing a rapid absorption of the lymphoid structures and inhibiting the over-production of the leucocytes in the marrow.

In the lymphatic variety of leucæmia the results of treatment, while fairly constant, have been only slightly encouraging, more success fol-

lowing in chronic cases. This form of leucæmia is less benefited by the rays than the myeloid kind. Joachim observed in this disease that the lymphocytes showed an absolute as well as relative decrease under the X-ray treatment. In seven cases treated the effect upon the lymph glands was a decrease in their sizes, though afterwards there was a tendency for them again to enlarge.

In myeloid leucæmia the rays have a peculiar action upon the myelocytes, the percentage falling, the lymphocytes showing a slight rise. Pancoast has reported a series of sixty-three cases, in which about 6 per cent. were alive and well three to six years after a symptomatic cure. Joachim believes that the decrease of the myelocytes is of great prognostic value, far more than the decrease in the total number of leucocytes; the lower the relative myelocytic count, the more favorable the outlook for the patient; and when high, the less favorable. He advises the rays in all cases of leucæmia, and its discontinuance when anæmia, which is associated with this disease, becomes more pronounced. Arsenic, he recommends, should be used in these cases and the rays again tried.

It is not as yet possible to say anything definitely as to a cure. Indeed, in some cases death may take place while the elementary state of the blood is improving. In others, however, life may be lengthened and the most important symptoms relieved.

Hodgkins' Disease.

As we might expect the lymphoid element of this affection is favorably acted upon by the rays, the glands becoming quickly isolated and diminishing in size. In a series of 22 cases treated by Holding and Warren, six were cured, thirteen improved, and three were unimproved. The enlarged glands were the first to be affected, the splenic enlargement disappearing more slowly.

While the treatment for this disease still leaves much to be desired, yet enough progress has been made to prove it the most efficacious remedial agent, and it may be combined with advantage with other therapeutic measures. In the treatment of these diseases a tube of high vacuum is generally used.

In leucæmia the parts exposed to the rays are the spleen and long bones. Maragharr states that the best results are obtained by exposing the glands of the neck and liver, thus covering a large portion of the blood. Aubertin believes that the quality of the blood should be an index of the treatment, the intervals being lengthened when improvement in the blood elements is noted, and raying never pushed so far that the leucocytic count falls to a low level.

In Hodgkins' disease the same kind of tube as in leucæmia is used, and exposures to be made over the spleen and enlarged

glands at the same sitting or alternately. In all these affections relapses are common, but can sometimes be controlled by further treatment. The use of a satisfactory medium, such as wet sole leather, as advised by Pfahler, is of service in preventing harmful action upon the skin during the long course of treatment required.

Tuberculosis.

The result of X-ray treatment is of most value in the local types of this disease. In the pulmonary variety, as far as we know, practically no remedial progress has been attained; yet some benefit may be expected from the tonic effect of the rays upon the blood. Of the local forms of this disease that involving the glands respond most readily to the treatment, especially enlarged lymph-nodes of the neck.

Tuberculous Lymph-Nodes of the Neck.—It is possible by use of the X-rays to cause absorption in those lymph-nodes which have not begun to break down. When suppuration, however, has occurred the best treatment is to evacuate the abscess and then employ the rays. The use of Iodine painted over the surface of the glands, with the possibility of its being carried into the glands by the rays, is strongly advised.

Enlarged Bronchial Glands.—When the bronchial glands are affected the treatment should be persistently used, and reliance placed upon physical signs for its discontinuance. It offers one of the most useful means for the relief of this disease, which is so inaccessible to surgical measures, and if employed early should be of much value in conjunction with other anti-tubercular remedies.

Tuberculosis of the Larynx.—The results obtained in lupus have led to its use in laryngeal tuberculosis with much encouragement, the treatment being applied by exposing the neck to the rays at frequent intervals. A good place is to ray one side until a slight reaction in the skin is evident, and then continue by exposing the opposite side of the neck.

We think the treatment would be more certain and speedier in its results if it were possible to carry the rays directly to the ulcerated sores through a hole. Dr. Isaac Shallcross reports a case of this disease which was X-rayed by Dr. Edward Gramm. The treatments were given on alternate days for two months. During this time phonation improved greatly, and the ulcers gave decided evidence of healing. The patient stopped treatment for a month, after which the rays were again applied three times a week for a month over the tuberculous process and symptomatica. The patient was then lost sight of, ignorantly giving up the treatment against the advice of his physicians.

This case, though not complete, is important as showing the possibilities of the X-rays in this disease.

Tuberculous Joints.—The X-ray treatment of tuberculous joints is variable in its results, frequent exposures being often necessary before any beneficial effects are seen. Lee, however, reports a case of elbow tuberculosis cured in six exposures. In the experience of Ridlon, tuberculosis of the hip-joint and spine has not been benefited. The most favorable results are to be looked for in tuberculosis synovitis. The joints should be carefully immobilized by a brace or plaster-cast, which can be split down the middle to allow its removal during treatment.

When surgical interference is indicated in these cases, it should be promptly resorted to and the raying subsequently continued.

Tuberculosis of the Testicle.—In this disease, where sterility is the usual result, the objection that might be urged against X-ray treatment—that of producing sterility—does not obtain; and as early excision does not prevent the occurrence of tuberculosis in the remaining testicle, it is justifiable to delay the operation until the X-rays have been tried, especially as the affection is usually a secondary one to some other tuberculous lesion of the genital tract, and it is possible that the rays may exert some influence over the whole process. The general measures used in this complaint should be combined with the use of the X-rays, and when surgery is indicated, conservative work, in conjunction with the rays, should give the best results. If, however, the patient's condition necessitates radical surgical interference, it must be carried out without delay.

W. B. De Garmo cites a case of an adult of robust physique, fifty-six years old, with a history of gonorrheal infection twenty-five years previously. He had probably had an enlargement of the testicle at that time. Five years before being seen, the testicle began to swell and pain ensued, which, though constant, was never very severe. He began to lose weight in the last eighteen months. At the time of examination the left testicle was enlarged to about the size of an orange and nodular and tender upon pressure. There was a small amount of fluid in the tunica vaginalis. Operation was advised and refused until two months later, when evidences were present of the breaking down of the testicle, at which time excision was performed, and a microscopical examination confirmed the diagnosis.

Shortly after this the right testicle became affected, and in seven months' time was enlarged to the same size as the other. He refused another operation, but consented to have the X-rays applied, and received in all one hundred and twenty-six treatments of ten minutes each between March 3, 1902, and September 14, 1903. Almost at once the pain was relieved and the swelling began to diminish in size, and at the end of the treatment there was an apparent cure.

Tumors.

It was in this field that the X-rays first showed their therapeutic possibilities, and where they have produced the most gratifying results, especially in epithelial tumors.

Epithelial.—These skin tumors may be divided into three classes: benign, malignant and doubtful. In these the doubtful class causes the physician much concern, as it is often impossible clinically to determine when the benign character ends and malignant changes take place. Clinically, the benign growths may be divided into the ordinary wart, the papilloma or mixed wart, and the brownish patch known as *verruca senilis*. These benign tumors would not be of much importance except for their tendency to lapse into the malignant, which usually occurs in advanced age.

The clinical varieties of malignant epitheliomata may be conveniently divided into the discoid, a superficial ulceration which frequently assumes the rodent type; the deep fungoid ulcer, and the subcutaneous nodule, which is scirrhus at first and later ulcerates. The degree of malignancy of these tumors is determined more or less by the character of the predominating cells, as shown by Krompecher and Bloodgood; those in which the basal cells characterize the tumor being the least malignant, with little or no tendency to lymphatic involvement; that of the prickle or superficial cell variety being the most malignant, with early metastasis in neighboring glands, while the tumor made up largely of cuboidal cells occupies a middle place. The recognition of the degree of malignancy is important as regards the field to be rayed, as in the slow-growing, basal-cell tumor it is only necessary to ray the actual field of ulceration, while in the more active prickle-cell tumors, the adjacent lymphatics should be treated as well, and the possibility of the benefit to be derived from an early excision should be borne in mind. The advantages of the X-ray treatment in these tumors, especially when situated about the face, are the avoidance of an operation, the good cosmetic effects obtained, and the less likelihood of a recurrence.

In raying these tumors the parts not undergoing treatment should be amply protected. The eye, however, seems to be peculiarly tolerant to the rays, and when the tumor is located near that organ the treatment can be carried out without any apparent harmful results. Dr. W. D. Bayley mentioned to the writer a case of epithelioma situated near the eye, in which he exposed the eye directly to the rays at regular sittings for a year, with no ill effects that he could observe. It has now been several years and there are still no changes attributable to the rays.

The following illustrative case was selected from the records of the Elkins X-ray department in the Hahnemann Hospital: In 1906, Sarah G., aged seventy-two years, applied for treatment for a large rodent ulcer about the left chest and shoulder. She gave a history of psoriasis of many

years standing. About two years previous the patient scratched one of the patches of psoriasis, making it bleed. Following this an ulcer developed and persistently enlarged. No metastasis could be detected. Microscopical examination showed it to be a basal-cell epithelioma. On account of its large area it was thought best to treat it with the X-rays. Exposures were made daily, at first of ten minutes' duration, with a tube of low vacuum placed at about ten inches from the ulcer, and with one milliamperere of current passing through the tube. Cicatrization began in about ten days and steadily progressed; the intervals between sittings having been lengthened first to alternate days, and then to twice a week. At the end of four months' treatment complete healing had taken place.

It has been our experience that this form of epithelial tumor responds more readily than those of the more malignant types. In the cases where operation is deemed best, a course of post-operative treatment should be pursued to prevent a recurrence and to lessen the chances of metastatic development. In the treatment good results may be obtained by frequent sittings and small doses, after the tumor showing improvement before the reaction which follows a full dose, so that it has been found unnecessary to produce the slight dermatitis which has so often been thought to start the healing process.

Sarcoma.—The recent results of X-ray treatment in this class of tumors have not borne out the earlier hopes for a complete cure, though it is possible to reduce the tumor in many instances, and in some to prolong life and afford relief for many distressing symptoms. However, it has been the rule with few exceptions that the growth has recurred and eventually caused death.

The varieties most favorably influenced by the rays are the glandular sarcoma and that affecting the lymph nodes, the so-called lympho-sarcoma. William B. Coley reports a series of sixty-eight cases with slight improvement in some, but in none was he able to say that he had obtained a cure, as recurrences were the rule. He considers that the combination of the X-rays with the mixed toxins gives the best results, and that the danger, that of toxæmia from the broken-down neoplasm, and the more remote danger of the possible formation of metastasis, may be avoided by care.

I have now under observation a case of suspected sarcoma of the lower maxilla following the extraction of a tooth. The swelling, which was very marked at the beginning of the treatment, has now at the end of a year almost entirely subsided, and the patient has gained in weight and suffers no pain nor inconvenience. Dr. Carl Beck reports a case of osteo-sarcoma with marked improvement. The tumor extended over the whole frontal bone, involving the orbit.

There appears to have been practically no improvement in the deep-seated sarcomata except in the relief of the pain, and the treatment is only

to be considered in inoperable cases in conjunction with other measures. In view of the paucity of results and the tendency to recurrence in these cases, operation, whenever feasible, should not be postponed. As a post-operative measure the rays may be of some service, and should be given a careful trial.

I am inclined to think that in the treatment of this class of tumors greater success will be attained as we learn more about its effects upon the different forms. Heretofore, the cases treated have been largely inoperable ones, in which a general metastasis had already occurred, or was imminent. In these hopeless cases it has been shown that it has a decided influence in lessening pain and in reducing the tumor. If further observation of the effects of the rays shall result in the confidence necessary to apply it in early stages, it may be that the most desirable results may be achieved.

Papilloma of the Larynx.—I have been able to follow three cases of papilloma of the larynx, in two of which there was a complete cure, the third patient preferring operation after a trial of the X-rays, which had influenced the growth favorably. In one case referred to the X-ray clinic in Hahnemann Hospital from the nose and throat department of the same institution, the patient, an adult, thirty-four years old, was treated three times a week for six weeks. At the end of that time, upon laryngoscopic examination, the papilloma had entirely disappeared.

The other case was one that had been under observation by Dr. Shallcross for ten years. The patient, a woman, was referred to Dr. W. D. Bayley for X-ray treatment, and she was treated for about one year; the treatment being suspended at the end of that time on account of an X-ray burn. There was decided improvement at first in phonation, and subsequently a complete cure resulted. It has been several years since the treatment was stopped, and in a recent examination Dr. Shallcross reports no return of the growth.

From these cases we are justified in considering the X-rays of distinct value in this affection, and upon the whole we may safely say that it affords one of the best means for its relief.

Carcinoma.—Of the carcinomata those of the breast have received the most attention from those interested in X-ray research.

I have observed within this last year three cases of primary carcinoma of the breast, one inoperable, the other two refusing operation. The inoperable one covered a large area of skin, the entire breast having almost entirely ulcerated away. A microscopic examination showed it to be made up chiefly of columnar-shaped cells, probably the least malignant of the breast tumors. X-ray treatment was begun and the wound slowly cicatrized, though there is still, after a year's treatment, some thickening at the upper and inner quadrant. The second patient, aged sixty, had,

clinically, a scirrhus growth in the lower outer quadrant, adherent to the skin, but not to the chest-wall, with enlarged glands in the axilla. Treatment was begun about a year-and-a-half ago with relief at once from pain and a diminution in size of the glands of the axilla; and, apparently, the primary tumor has not advanced. The treatments which were given thrice a week at first were gradually limited to two, and during the last six months to one treatment a week. The patient enjoys good health, pain is absent, and apparently the growth is under control, although a radical cure is not expected.

The third patient, aged fifty years, unmarried, had a tumor in the left breast, involving the upper portion, and extending nearly to the nipple. It first became noticeable about four years ago. It was extremely hard, nodular, purplish in color, and attached to the skin. X-ray treatment has been carried out thrice weekly for a year, with a marked lessening in size, and a less angry appearance of the tumor.

While there is no doubt that the X-rays exert a powerful influence upon the cancer cells, yet they are more or less uncertain in their ultimate results in their present state, and should be reserved for those cases where operation is not practicable, and in conjunction with surgery as a post-operative means towards diminishing recurrences. In a post-operative case recently treated, the scar after three months' treatment almost entirely disappeared. This was thought to be the direct effect of the rays, as the portion of the scar most actively treated was almost completely absorbed. There is a tendency to rely more and more upon the rays in the after-treatment, Murphy, of Chicago, going so far as to suggest that simple excision of the breast be performed, and the enlarged glands in the axilla be treated by the X-rays.

In the inoperable cancers of the breast the great advantage as a palliative measure afforded by the X-rays should not be overlooked. It has been shown that lymphatic channels exposed to the rays become obliterated; and in this way it is possible to isolate more or less the cancer as well as to ameliorate the severe pain often associated with this disease. The number of treatments experimentally found to effect these occluding changes are found to be about thirty of ten minutes' duration.

Care must be taken when raying malignant tumors to guard against too rapid destruction of the growth and increased metabolism caused by systemic absorption of the broken-down masses. Short exposures and good judgment exercised as to their frequency will minimize this danger.

Keloid.—The power of the rays to absorb scar tissues was one of the first observations made. It has been used in post-operative treatment to prevent malignancy in the scar, and in those inveterate types of scar tissue which no other measure seemed to affect. Allen cites three cases which improved under treatment, and Pusey was able to cure two keloids which

had recurred after operation. Eighty exposures were required to secure this result.

In a case recently treated we had an opportunity to observe the remedial effect of the rays in this class of growths. The patient, a boy, aged ten years, had been bitten by a dog six weeks before he applied for treatment. At the time of examination there were found three small keloids on the anterior portion of the thigh, which caused him some pain. X-ray treatment was begun, and exposures made daily for two months; twice weekly, the following month, and once a week the fourth month. About the second week the keloids began to diminish in size, and at the end of treatment had entirely disappeared.

Goiter.

In this disease, where remedies have had very little effect, the X-ray treatment has been productive of encouraging results. Reports of the treatment of simple goiter, and also the exophthalmic variety, justify its use. Mayo speaks of ten cases of exophthalmic goiter in which the symptoms were markedly relieved and the thyroid glands reduced in size. In two especially were the results gratifying. Görl records eight cases of simple goiter reduced in size, and Beck two cases improved, one of Graves' disease being treated after operation. Campbell relates a case of a patient being treated for acne, having at the same time a goiter which almost entirely disappeared. All these cases, showing such uniform improvement from the rays, gives us the assurance of having a remedy which merits consideration in this disease.

Freund reports five cases of exophthalmic goiter in which gratifying effects were received from the rays, and he claims that in goiter the X-ray meets the casual indication. It affects favorably the nervous symptoms and the weight, and its use results in the disappearance of the cardiac trouble, the goiter and the exophthalmos. The best prognosis is afforded by the soft, vascular and compressible goiters, and the symptoms disappear the quicker the more early the treatment.

Neuralgia.

The analgesic effects of the X-rays has led to its application to neuralgic affections, and it seems with results varying with the type of the disease, the causal factors being the important element in the results. The variety of neuralgia caused by a chronically inflamed nerve trunk is the most amenable to treatment.

Leonard reports several cases in which he was able to obtain complete relief. One was an acute infra- and supra-orbital neuralgia, following an attack of grip. Five exposures were made with a perfect cure. He also reports a similar case affecting the inferior and superior dental nerve, and

one of *tic douloureux*, which responded very favorably to the rays. In a case of *gouty neuralgia* treated, the effect of increased metabolism caused by the rays resulted in a uric acid crisis, which necessitated a discontinuance of the treatment for the time being, the patient experiencing marked relief from the neuralgia, and later being entirely cured by a few more treatments.

Arthritis.

In Pfahler's recent article on the treatment of *arthritis deformans* by the Roentgen rays, he gives credit to Moser as the one who has led the way in the treatment of joint affections by this means. In 1904 Moser first reported a case in which, by accident, he discovered the value of the rays in this disease. The patient suffered from a long-existing arthritis, and in examining the knees by the X-rays Moser observed an exacerbation of the symptoms, which quickly subsided with improvement in the diseased joints. After this phenomenon he began a systematic treatment of the joints by the rays. The pain was quickly relieved, and the joint inflammation subsided, leaving a good functional result. In a later report he cites six cases of *gout* and six of *rheumatism* treated by the Roentgen rays, with speedy relief of pain, swelling and tenderness in acute cases, and marked relief, and in some cases a complete cure, with good functional results in the cases of chronic rheumatism.

Pfahler reports two cases of *arthritis deformans* treated in this manner. In both pain was quickly relieved and stiffness much lessened, and the movements of the joints greatly improved. The radiographic examinations made at intervals showed that the pathological changes were undergoing repair commensurate with the disappearance of symptoms. Treatment was made in both cases with a medium tube at a distance of fifteen inches, and lasted fifteen minutes. The patients at the same time were subjected to massage and passive motion.

In this very intractable disease from the results in the above cases it is reasonable to consider the X-rays as of signal value in the treatment, and we believe that the best permanent results will be obtained when they are combined with internal medication and physical therapy.

In acute *rheumatism* and *gout* we have an agent, as shown by Moser, which quickly relieves pain and hastens repair, and lessens the tendency to a stiff joint. The usual measures to ensure rest and protection for the joints should be used.

CHAPTER XXX.

HYDROTHERAPY.

By Wm. F. Baker, A.M., M.D., Lecturer on Physical Therapy, Hahnemann Medical College of Philadelphia.

By this term we understand the treating of diseased conditions by means of water in any one of its three states, liquid, solid, and gaseous. In the use of the liquid state we perhaps know best its results, and this use has been known long to the medical profession. But that hydrotherapy has been abused and unscientifically used, and therefore at times condemned, we all must recognize. It must not be forgotten that in water we have a most valuable agent always at hand and capable of many transformations and changes. This renders it a most valuable therapeutic agent. Its scientific application has been sadly neglected until within recent years, and perhaps no one has done more to bring its use up to a standard than has Baruch. Water has been used as a remedial agent since the days of Hippocrates, and the fact that it has never been wholly discarded leads us to a closer investigation of its results and scientific application to the sick. The clinical results obtained by those who are scientifically employed in the use of water in the treatment of the sick have won the highest regard of the profession and lastly of the patients themselves.

The clinical results obtained are dependent entirely upon a few recognized physiological principles. These few principles must be clearly understood before the whole subject can be clear; first, those dependent upon its physical properties, and, second, those dependent upon its mechanical effects. One of the physical properties of water which renders it a most valuable agent is the fact that it retains heat and as readily gives it up. This is perhaps the most important, and upon it rests the whole system of therapeutics. What other agent have we at hand of which it can be said that it has more spheres of usefulness? Water may be used in its solid form in the shape of ice and snow, and in its gaseous form as steam and in medicated vapors.

The physiological effects of water on the body may be summed up as follows:

- (1) Tonic effect on the skin and its circulation.
- (2) Circulation.
 - (a) Composition of the blood.
 - (b) Rapidity of circulation and blood-pressure.

- (3) Respiration.
- (4) Temperature.
- (5) Tissue change.
- (6) Secretions.

The most notable changes in the blood are the increase in the elements and in the specific gravity.

The deepened inspirations and forced expirations cause a rapid throwing off of the products of metabolism.

On the muscular system cold water has a marked tonic effect, while warm or hot water has a decidedly relaxing effect.

Since the functional activity is the criterion of tissue change and also of secretion, these processes are helped by means of the increased circulation.

These effects have been demonstrated beyond a doubt and substantiated by such observers as Thayer, Baruch, Winternitz and Breitenbach.

The Hydriatic Prescription.

While this may seem a nicety of expression and an adding to the detail of hydrotherapy, yet it is quite essential to the proper administration of hydrotherapeutic measures.

The following formula is suggested :

Name of Patient.	Age.	Occupation.
Diagnosis.		
	Duration.	Temperature.
		Site.
Full bath.....		
Half bath.....		
Sitz bath.....		
Compresses.....		
Wet-pack.....		
Drip sheet.....		
Rain bath.....		
Turkish bath.....		
	Before Bathing.	After Bath.
		During Bath.
Temperature (body).....		
Pulse.....		
Respiration.....		
Excretion of urea and solids and general urinary exam.....		
Results.....		

M. D.

Outfit for the Practice of Hydrotherapy.

A modest and yet very complete outfit for hydrotherapeutic practices should consist of

- One pair of woolen blankets.
- One pair of muslin sheets.
- One pair of rubber sheets.
- Two water thermometers.
- Two 2-quart pitchers.
- One large foot-tub.
- One shower bathing attachment (soft rubber).
- One large handkerchief for head compresses.
- One bath mitten.
- One clinical thermometer.

General Rules for the Application of Hydrotherapeutic Measures.

The following general rules may be laid down as governing all applications :

- (1) Know the condition of the temperature, pulse and respiration before, during, and after a bath or application.
- (2) General bathing should never be indulged in within a period of time less than two hours' time after meals.
- (3) Friction is essential in most all procedures, and this may be either mild or vigorous, depending upon the case.
- (4) Avoid tiring the patient.
- (5) Know accurately the temperature of the water which is used.
- (6) The use of the head compress is always indicated.
- (7) A period of rest should follow all treatments.
- (8) Extreme chilling of the patient, or an evidence of shock is an indication for the removal of the patient and application of stimulation.
- (9) In unconscious states, or where the sensibility is impaired, great care should be exercised in order that the patient does not receive a burn. These burns invariably end in necrosis of tissue, and are hard to heal.
- (10) The length of time for treatment and the frequency depend largely upon the case and the desired result.
- (11) The use of stimulants is indicated after treatments in cases of shock.
- (12) As to the question of sending the patient to bed, dry or wet, it can be said that there is very little difference, providing the patient be covered so as to exclude all drafts, and this may be accomplished by means of a robe to which is attached a large hood.

The Practice of Hydrotherapy.

The entire subject of practical hydrotherapy may be divided into the following subdivisions :

1. Ablution.
2. Affusion.
3. The sheet bath.
4. The wet-pack.
5. Compresses.
6. The full bath.
7. Local baths.
8. Irrigation.
9. Steam applications.
10. Medicated baths.

Ablution.—This consists in the application of water to parts of the body by means of the hand, sponge or glove. This form of application finds its most useful sphere of action in the acute febrile diseases where a reduction of the temperature is one of the first things to do. Where a temperature reaches a point above 101° F. this measure should be applied, and repeated as often as necessary to keep the temperature to that point at least. When higher temperatures exist, it will be necessary to repeat the application more frequently.

This method has been practiced in different ways by individual observers. One of the most common methods, and one which offers many advantages, is the placing of the patient in a reclining position on the back. With the covering of the bed in place, the hand is gently pushed under the covering, and the application of water at a temperature of 70° F. is made by means of the sponge, glove, or mitten to all parts of the body. This glove should be well wrung out before use and the patient allowed to dry under the covers, being careful to permit no exposure. By many this method is the only one employed in febrile cases. In the acute febrile affections Baruch strongly advocates the following: "A rubber sheet is laid upon one side of the bed covered with a blanket, and upon this is spread a sheet, one-half reaching over the edge of the bed. The patient is now placed on the sheet. The face is bathed with water at 50° F. to 65° F. The different parts of the body now are bathed in succession by throwing water on them and gently rubbed by the hand."

Still another method consists in placing a wet towel over successive regions of the body with the patient in the same position, and the arrangement of the bed being the same.

For the ambulant cases general ablution is to be performed. This is done by having the patient stand in twelve inches of water at a temperature of 100° F., and by having water at a temperature of 50° F. to 80° F. poured over him.

Ablution is indicated in fevers, and as a preliminary measure to many other hydrotherapeutic applications. Some one has aptly termed it the hydriatic test of a patient. In typhoid fevers the first mentioned application is all that many use. Among chronic conditions ablution is indicated in chlorosis, anæmia and general neurasthenia.

The Half Bath.—This measure is of great service, and is accomplished by having the patient seated in a bath-tub one-half filled with water at a temperature from 85° to 90° F. Before entering the bath a compress of cool towels is applied to the head, and the patient is either lifted into the tub, or, if able, allowed to step in. The water then is to be thrown about the body or, preferably, the whole body is dipped and the patient is seated in an upright posture. Associated with this bath the Germans use the method of affusion, by which water is poured upon the patient and friction applied.

The bath is continued for a period of time ranging from five minutes to fifteen minutes. It is indicated in plethoric conditions, and as a hygienic measure where a mild, refreshing tonic bath is wanted.

In nervous disorders the hot half bath is used. The water is at a temperature of 90°, and the seance continues for twenty minutes. Insomnia, hysteria and tabetic crises of pain are relieved by this measure.

As a means of lowering temperature in febrile cases, particularly the acute infectious diseases, this method has its advocates, and particularly so in typhoid fever, but when one takes into account the fact that many of these baths are given by inexperienced attendants, and the lifting in and out of bed of the patient is not always done as one would like it, it has been the experience of many that sponge bathing in bed offers to us advantages over this system, and particularly so since the results of these are very gratifying.

The Ziemssen graduated bath is a modification of this, and consists in the addition of cold water to the bath down to 68° F.

Affusion is a measure by which the patient either stands in an empty tub or lies on a rubber cot, receiving upon his head and shoulders and body a stream of water from a pitcher. Depending upon the height and temperature of the water will be the stimulating effect. Currie has followed this method with great success.

The sudden impact of the water acts as a strong tonic to the respiration, circulation and to the central nervous system, and as a result the general nutrition is increased.

The indications for this treatment are fever, convulsions, meningitis, particularly where there is a tendency to tonic convulsions and coma.

Others have advised the use of cold affusions in diseases of the lungs and of the heart, particularly where the left ventricle is at fault and hypostasis results.

In poisoning by alcohol and opium particularly has our experience been sufficient to record, and here the beneficent results can be seen by any one who will carefully follow out the cold affusion.

Equally efficient is the cold affusion in scarlet fever, where there is an adynamia and a tendency towards coma, the system being completely overwhelmed by the toxins of the disease, the respirations shallow, the temperature high, and the pulse rapid and feeble. Here cold affusions, 70° to 65° F., often prove a positive measure in the relief of these urgent symptoms. There can be no danger from cold if the patient is carefully guarded and brisk friction be practiced.

The Sheet Bath.—The articles required to carry out this measure are several coarse and fine sheets, a pair of blankets and a rubber sheet.

The bed is prepared by spreading the rubber sheet upon it and a blanket is laid over it. Alongside of the bed is a small foot-tub. The patient, undressed and wrapped in a blanket, stands in the tub. The first sheet is taken and wrung out of the water (50° to 85° F.), and this is placed upon the bed. The patient now is prepared by having the head compress applied, and is laid upon the sheet and wrapped in the following manner: Both arms of the patient are held above the head. The upper left corner of the sheet is grasped and carried across the body to the opposite side, where it is tucked under the right side. The arms are now brought close to the body and the right side of the sheet is carried across the body, completely enveloping it.

The first impression will be a shock to the nerves and deep inspiration will result. The hand is passed over the patient. As soon as warm spots are noticed, water at a temperature of 50° to 60° is poured on that part. Friction is applied as indicated, and the patient may be allowed to remain in this bath as long as is necessary to control the symptoms.

The indications for the sheet bath are febrile states, where the fever is the most annoying symptom. This method of application finds a very large sphere of usefulness in the treatment of thermic fever, and, in fact, is now used largely in all of the large city hospitals where they are called upon to treat many of these cases during the summer months.

If the fact that a patient suffering from a temperature of 103° F. or over cannot take cold were only impressed upon the minds of the laity as well as on the minds of many practitioners there would be more of this treatment used in the febrile states.

A modified form of this method is the **drip sheet**. This is applicable to chronic cases, as it gives the operator free scope for friction.

It is performed by having the patient undress in a room whose temperature is not less than 70° F. The patient stands in a foot-tub in which is water of 100° F., and a dripping sheet wrung out of water at a temperature of 70° to 75° F. is wrapped around him. Then a basin of water at a tem-

perature of 60° to 50° F. is poured over the patient and is followed by friction. Usually the patient is able to walk out of the bath and is dried down with a warm towel.

It is indicated in chlorosis, anæmia, melancholia, and general neurasthenic states.

The so-called cold rub of many writers is practically the same as above, except that the water used is of a lower temperature and is followed by more brisk friction.

The use of a cup of hot milk or broth following these treatments adds largely to the effect and prevents fatigue.

The Wet-Pack.—This procedure is the oldest known to the profession as well as to the lay mind. No branch of the hydropathic practice has been so misunderstood and used in such haphazard manner. It is quite necessary to understand it and practice it carefully if the best results are to follow.

The wet-pack properly performed should be as follows: A large woolen blanket is spread upon the mattress; a large, coarse linen sheet well wrung out of water at a temperature of 60° to 70° F. is placed upon the blanket. The sheet should be large enough to extend well beyond the feet of the patient. The patient with the head compress on is laid upon the sheet with his arms extended above his head, and the overhanging edges of the sheet are brought over the body from right to left, so that his body is completely enveloped by the sheet, the arms moved down to the side. Next, the overhanging portion of the sheet is brought from the right side, enveloping the arms. The procedure is completed by carefully tucking in the feet. The blanket is now drawn firmly over the body from the left side first, then from the right, and tucked in at the neck. Baruch lays emphasis on the exclusion of air as necessary to the proper application of the pack. The patient is allowed to stay in this pack for some period of time, depending largely on the case. All wet-packs must be followed by some other measure, as a half bath, sheet bath, or cold ablution.

As soon as the first effects of the shock are over, the peripheral vessels begin to dilate and a general warmth of the body ensues. There is consequently an equalization of the temperature. This action cannot be but for the best in the treatment of febrile conditions.

Under prolonged application, the wet-pack has been found to be one of the best agents for the elimination of toxins. It is particularly of value in the treatment of the toxic states resulting in coma, when the patient may be allowed to remain in the pack from two to three hours. As an anti-febrile agent the pack is to be used for a short time only, and the water moderately cool. The wet-pack offers us no advantage in cases of hyperpyrexia that is not afforded by cold bath or ablutions, unless it be for the

mental effect both to the patient and family. There is no doubt but that less objection will be offered to the use of the wet-pack, but in cases of extremes in temperature it is not to be compared in its usefulness to the other hydiatic measures.

As a hypnotic in many of the acute illnesses this form of treatment cannot be surpassed. Many restless patients even after they have resisted the use of hypnotics will calmly sink in sleep during the treatment.

Cerebral hyperæmias and congestions, even when they border on coma, are greatly benefited by the prolonged use of this remedial agent. Unconscious states resulting from alcoholism, opium, chloral, uræmic poisoning, diabetes and heat exhaustion, form a class of cases that are at once benefited by a prolonged stay in the pack. The temperature of the water and the length of time for the pack being arranged to suit each individual case.

In chronic diseases of the mind associated with any form of excitement we have in the pack a useful remedy.

The Wet Compress.—This is understood to mean a towel folded in the form of a pad, and used for the application of water at varying temperatures to different parts of the body. This is purely then a local measure. Linen holds the moisture best, and is, therefore, most advisable.

The Head Compress.—This is applied in the form of a turban, and should accompany all therapeutic applications. The towel is folded on itself, and is wrung out of water at a temperature varying from 60° to 70° F. It is used to prevent annoying symptoms of cerebral congestion.

The Throat Compress.—This is applied with a piece of flannel, which is passed under the chin from ear to ear and pinned across the head. The linen compress is laid under a flannel covering, after having been wrung out of water at 60° F. In cases of acute catarrhal or suppurative tonsillitis it has a most marked action, very often cutting short what otherwise promised to be a severe illness.

Local Baths.

Sitz Bath or the Hip Bath.—This may be carried out by means of a specially prepared tub, or an attachment simple in construction can be arranged in the ordinary bath-tub. The special tub is, however, more to be desired, and affords better results.

The patient seats himself in the tub, and the water is allowed to flow around the body until it reaches a point in depth which corresponds with the level of the umbilicus. Massage or friction is carried on at the same time. The temperature of the water should be at a point of 104° for the hot hip bath, and the cold hip bath at 54° F. Care should be taken that the exposed parts of the patient be well covered, and that no chilling of the body results. In the improper application of the hip bath much harm may be done.

According to Winternitz, the hip bath has a great effect upon the abdominal circulation.

The bath may be continued for from ten to twenty minutes.

The hip baths are indicated in hyperæmic conditions within the abdomen and inflammation of the various organs, but particularly of the pelvic viscera.

Baruch claims, and his observations have the verification of other observers, that in cases of menorrhagia excellent results are obtained by the use of the hip bath at a temperature of 85° F. Misiewicz has summarized the action as follows: "Brief cold hip baths are indicated in paralysis of the muscular fibres of the bladder and the intestines; in prolapsus ani, spermatorrhœa, impotence, and cutaneous anæsthesia; in weakness of the uterine ligaments; menorrhagia; muscular atony of the gastric and intestinal coats manifested by constipation and flatulency."

Medicated Baths.—The therapeutic value of the bath is enhanced by means of remedial agencies, either added to the water or naturally found in it. Those localities where the water contains these various ingredients and the temperature is naturally altered offer many advantages over the artificially prepared ones. Unfortunately, the location of these natural sources is such as to place them practically beyond the reach of the majority of persons. Recognizing this fact, many have been the attempts to so modify the home appliances that they will correspond to the natural as nearly as possible. While the results claimed from these artificially prepared media are all that can be desired, as verified by all practitioners who have used them, there is no doubt but that the natural spas and bathing establishments offer many advantages not to be found at home. Perhaps it is the combination of the exercise and the open-air treatments which increase their value. The absence from home, from business and worry is, of course, a factor which we cannot overlook.

The early history connected with the founding of these many watering places throughout Europe and America seems to show that these waters have been known for many years, yet their therapeutic value was supposed to rest alone on their being used internally. Becher was one of the earlier investigators who believed and taught that the quantity of water taken into the system should be limited, and that more importance be given to the bathing.

Steam Applications.—The value of steam applications has been long recognized in the old practice of steaming the throat in cases of catarrhal croup. This is carried out by means of a specially prepared croup kettle, or by placing the boiling water in a cup and placing over it an inverted funnel. In cases of diphtheria it has been known to lessen the danger of laryngeal extension. Steam has been observed to possess a marked styptic action, and has been used to control uterine hæmorrhages.

Perhaps its most common use is as a part of the Turkish bath, and

here it forms an admirable agent in the production of sweating and relief of the capillaries of the skin.

As is well known this is a hydriatic measure, consisting of a thorough heating of the entire body by means of hot air ; then a steaming to produce increased secretion of sweat, and, finally, a washing or ablution of the entire body. This may be followed by a shower-bath or plunging into water of varying temperatures.

These methods are of value as a means of ridding the system of waste products which are incident to systemic conditions, as plethora, lithæmia, gout, kidney disease and heart lesions, but in the latter they should be used with a great deal of caution.

The same general rules hold here as with all hydriatic measures.

Balneology and Crounotherapy.

Classification of Mineral Waters:

Class 1. Alkaline waters containing alkaline carbonates and usually free carbonic acid gas.

Class 2. Saline waters containing sulphates and chlorides.

Class 3. Alkaline-saline waters containing a mixture of carbonates with the sulphates.

Class 4. Acid waters containing free sulphuric acid, free hydrochloric acid, and free silicic acid.

Class 5. Combined waters, as carbonate of lithia, carbonated saline or carbonated acid waters.

Classification of mineral waters according to their temperature :

Cold.

Tepid.

Warm.

Hot.

Classification of waters according to their basic solid constituents :

Sodic.

Lithic.

Potassic.

Calcic.

Magnesic.

Chalybeate.

Aluminous.

Classification as to the presence of gases :

Non-gaseous.

Carbonated.

Sulphuretted.

Carbonated.

Oxygenated.

Azotized.

As a representative of the alkalo-saline baths, perhaps Carlsbad could be singled out. By alkalo-saline is meant those waters which, in addition to Carbonic acid and alkaline salts, contain a considerable amount of the Sulphate of soda. The natural temperature of these springs vary from

Centigrade, 36.6° to 73.2°

Reaumur, 29.3° to 58.5°

Fahrenheit, 97.8° to 163.6°

The waters, as a rule, are clear and free from color, quite palatable but slightly saline in taste, although this saline property is never so pronounced as to cause nausea or vomiting.

This variety of bath is indicated in the following :

Diseases of the stomach, such as catarrhal gastritis, hyperchlorhydria, ulceration of the stomach, and also in dilatation of that organ.

Diseases of the Liver.—In these conditions both the drinking of the waters and the bathing are best known. It seems to be a generally accepted fact, made mention of by most all the recent writers on the therapy of the liver, that the saline treatment is a valuable adjunct to other therapeutic agencies. This is particularly so in the congestions of the liver, both active and passive, whatever be their cause. Other conditions of the liver, such as cholelithiasis, catarrhal jaundice, and simple atony are markedly benefited.

The contra-indications in liver diseases are advanced amyloid change in that organ or association with advanced diseases of the heart and lungs.

3. After treatment in *acute infections*, principally malarial and intermittent fevers, especially if there be any long-lasting splenic engorgement.

4. *Diseases of the Genito-Urinary Organs*.—These saline waters have long been used as an adjuvant following surgical interference of the genito-urinary tract. Chronic congestions in these organs are markedly benefited in the majority of cases. Catarrhal conditions and inflammations respond to the treatment unless there should be an advanced disintegration of the kidney itself, advancing cardiac weakness or advanced lung disease, in which cases the treatment is contra-indicated.

5. *Diseases of the intestines*, such as constipation and chronic diarrhoea.

6. *Constitutional diseases*, such as gout, rheumatism, obesity and diabetes mellitus.

Sea Baths.—In the action of a sea bath several factors must be taken into consideration, namely, saline ingredients, the low temperature, and the active exercise engaged in during the bath. This exercise varies, as will be readily seen, by the condition of the currents and tides.

The effect then of the ordinary sea bathing cannot be determined *a priori*, for the amount of saline ingredients must vary, as also the motion of the water. One of the most noted effects, however, is the stimulation produced upon the nervous system by the active exercise in the open air

and by the force or impact of the waves. There is primarily a marked action on the vascular system, giving rise to an increase of the circulation.

Aside from this must be taken into account the sensory effect ; and it is upon this that much good is derived by those who are at first timid and less courageous. Summing up the action, it can be said that the effect is identical with a saline bath at the low temperature associated with active exercise.

Sea baths are indicated in states of exhaustion and functional diseases of the nervous system, anæmic states and constitutional disturbances.

The duration of the bath should be determined by the temperature of the water and of the surrounding atmosphere. Usually once daily is sufficient, and then only for a period of thirty minutes for the average bather. Perhaps more harm is done at our seashore resorts by the indefinite prolonged bath and seance in the sand with another "dip" to warm up after the bather has become chilled.

CHAPTER XXXI.

DISINFECTION.

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THE object of disinfection is to destroy agents capable of spreading infection. Success depends upon an accurate knowledge of the limitations of the substances used and of the proper method of their application. A true disinfectant is an agent capable of destroying infective micro-organisms. An antiseptic is one which though inhibiting the growth of bacteria is not a germicide. A deodorizer destroys foul odors and may or may not possess disinfecting properties. For example, charcoal is an excellent deodorizer, but has no disinfecting power. Formaldehyd combines the properties of deodorizer and disinfectant. Furthermore, antiseptics may in strong solutions be capable of destroying bacteria, while in the weaker combinations they simply prevent growth. Corrosive sublimate in dilutions of 1 to 150,000 will restrain development, whereas when used in strengths of $\frac{1}{5000}$ or $\frac{1}{10000}$ the death of bacteria is assured. The same is true of Formalin. No agent can be classed among the active germicides which has not given both in the laboratory and in practical applications uniformly satisfactory results, as determined by the death of test objects. These dependable agents are both physical and chemical. Frequently the best results are obtained when one is used to supplement the other.

Disinfection by all the physical agents with the exception of steam in a closed chamber can be employed in any household, no special skill or apparatus being required. By insuring absolute cleanliness throughout the entire course of a communicable disease, the necessity for deeply penetrating agents when the terminal disinfection is performed is materially decreased. The presence of moisture and filth furnish the media in which bacteria most readily multiply. The free use of soap and water energetically applied is of the greatest importance.

Sunlight possesses active germicidal properties. Rosenau has demonstrated that the plague bacilli die after a half hour's direct exposure, provided the temperature of the sun is above 30° C. For practical purposes, however, very little reliance can be placed upon sunlight. All isolation wards and rooms in which infectious cases are treated should be thoroughly aired and sunned whenever possible, but the more active disinfecting agents should be employed to purify articles which have become contaminated.

Boiling is one of the most effectual of all germicides. Bedding, body linen, tableware, bed-pans, urinals, are rendered sterile after an immersion in boiling water for one-half hour. Many of the pathogenic bacteria are instantly destroyed. Spore-bearing micro-organisms require an exposure of from one to two hours. If necessary, as it usually is, to remove infected material from the sick-room for treatment by this method, precaution should be taken to prevent the soiling of objects without. Surgical and other instruments may be sterilized without fear of injuring cutting edges after the addition of 1 per cent. of Bicarbonate of soda. Boiling water, to which Bichloride of mercury or Carbolic acid has been added, is one of the best solutions for cleansing floors, wood-work, etc.

The oven of an ordinary cook stove may be utilized for disinfection by dry heat, the degree required being just short of that necessary to scorch cotton. But little penetration can be secured, and its use is restricted by the injurious effects upon woolen and other goods, scorching taking place as soon as the temperature rises above 110°C . To be sure the bacteria are destroyed, a temperature of 150°C . must be maintained for one hour. Articles should be so arranged that the heat is evenly distributed. Dry heat fixes stains caused by albuminous substances. Articles soiled by blood, etc., should, therefore, not be exposed to its action. Steam in a closed chamber in which a partial vacuum has been obtained is the best disinfecting agent known, and where deep penetration is required is the only safe method to employ. In municipalities which have a public disinfecting station, the chamber is operated by skilled employees, and its thoroughness may be relied upon by the physician. In the ordinarily appointed household, however, streaming steam is the only form in which it may be used. Infected articles should be suspended over a large boiler and some more or less impervious substance arranged in the form of a tent over them. The addition of common salt raises the boiling point of the water, and steam being generated at a higher temperature is much increased in its efficiency. Articles should be exposed for at least one hour. Objects of no value and children's play-things, which have been constantly handled during an infectious illness, should be burned, unless easily rendered sterile.

Chemical agents play a very important rôle in this work of prophylaxis. Bichloride of mercury, Formalin, Carbolic acid in its various forms, and the different lime preparations are reliable germicides when properly used. Corrosive sublimate should always be colored by one of the aniline dyes as a matter of precaution, and used in strengths of from 1:800 to 1:500, the immersion of the object lasting from one-half to one hour. Its corrosive action must be borne in mind. A solution cannot be kept in a metal receptacle, not alone because of destructive action, but since it at the same time becomes inert as a disinfecting agent. Lead is rendered brittle by

contact, and even when well diluted solutions should not be poured into hoppers or sinks which drain into pipes made of this metal, and Bichloride should not be employed for the disinfection of fæces or sputum in the presence of albumin, which prevents penetration. Infected bedding can be disinfected by a two hour immersion in solutions of 1:2,000; heat increases its germicidal action.

Carbolic acid in 3 to 5 per cent. solution is an excellent agent for the disinfection of urine, sputum, and fæces. Its germicidal properties are not so great as those of the Bichloride of mercury. Spores are not destroyed, but practically all the pathogenic bacteria are of the non-sporulating variety. The quantity used should equal or exceed in bulk the substance to be disinfected, the exposure being from one-half to one hour. Stock solutions of 5 per cent. strength may be quickly prepared by adding about six ounces of the pure acid to a gallon of hot water. Tricresol, Creolin, and Lysol are superior to the pure acid. Tricresol destroys spores, being, bulk for bulk, three times as powerful; Creolin contains 10 per cent. of the Cresols; Lysol about 50 per cent. of the Cresol, and ranks with Tricresol in germicidal strength. It has the distinct advantage of mixing with water in all proportions. Soiled linen may be immediately placed in any of these solutions to await boiling. Formalin, a 40 per cent. solution of Formaldehyd dissolved in water, is both a deodorizer and a disinfectant. Solutions should be of from 1 to 4 per cent. strength, and may be used to disinfect all articles with the exception of iron and steel, which hot solutions attack, and furs and leather goods, which are rendered brittle. Immersion should last one-half hour. Fæces and urine in small quantities are rendered sterile in a very few minutes. Its power of penetration is greater than that of Bichloride of mercury. The presence of albumin does not cause precipitation.

The use of the lime preparations is restricted to the disinfection of excreta, cesspools, outhouses, etc. It is both cheap and efficient. White-wash, freshly-slacked lime mixed with water, is an excellent agent for disinfecting the walls of rough structures, all germs upon their surfaces being quickly destroyed. Milk of lime, slacked lime, mixed with water to a creamy consistency, is used for the disinfection of excreta and privy vaults. The lime should be thoroughly mixed with the mass, since disinfection is possible only when intimate contact is secured. Chloride of lime may be used either in the form of a powder or in solutions of 4 per cent. strength for the same purpose. It is very important that the lime be of good quality, and should not have undergone decomposition. The receptacle should remain covered for one hour before final disposal.

For the terminal disinfection of the sick-room, either Sulphur dioxide or Formaldehyd may be employed. The room should be rendered as nearly air-tight as possible by sealing all cracks, ventilators, etc., with

gummed strips of paper, putty or batting. The use of Sulphur dioxide is restricted almost solely to unfurnished rooms, barracks, etc., on account of its permanent injurious effects upon fabrics, especially colored goods. The fact that it is easily obtainable and an efficient agent, however, gives it a most important place among germicides. It has also the additional advantage of being a powerful insecticide, a property which Formaldehyd does not possess. Sulphur is best employed in the form of flowers of sulphur. Five pounds should be used for every one thousand cubic feet of air space, and the room kept sealed for twenty-four hours. The pot method of burning flowers of sulphur is extremely simple. One of several metal pots, according to the surface to be exposed, should be placed upon bricks, in receptacles containing water, the water not only removing the danger of fire, but also furnishing the necessary moisture to hydrate the sulphur, upon which its germicidal action depends. The tub or boiler should be raised several feet from the floor on a table or similar object to prevent the sulphur fumes, which are heavier than air, settling as they cool and depriving the burning powder of the oxygen necessary for its complete combustion. It may be lighted either by a hot coal or touching a match after the addition of alcohol. Arrange the powder so that there is a well-marked concavity in the centre of the pot.

Formaldehyd may be employed in several ways. The gas may be generated by distillation from Formalin, ten ounces being used for every one thousand cubic feet by heating Paraform, one of the polymeric forms of Formaldehyd, or by spraying.

Experiments conducted by the Philadelphia Board of Health have demonstrated that strong solutions of Formaldehyd employed in the form of a fine spray gives the best results. The solution used consists of equal parts of water and Formalin, three pints being used for every one thousand cubic feet. Every part of the room must be thoroughly and quickly sprayed under pressure of compressed air. The method practiced by the Chicago Board of Health consists of sprinkling sheets stretched across the room with Formalin, ten ounces for each one thousand cubic feet. A sheet 5 x 7 will hold five ounces without dripping. If no apparatus is at hand, the sheets may be wrung out of Formalin and hung up over wash-lines. This is not so effectual a method. Rooms should be kept closed for twenty-four hours. The gas has absolutely no injurious effect upon any object. The odor is best expelled by exposure to fresh air and sunlight. The use of Ammonia as sometimes advised simply substitutes another odor, that of Formamid, which is just as persistent. Paraform is useful for disinfecting small rooms which can be tightly sealed or closed.

Patients, after recovery from infectious disease, should be washed with soap and water, and then sponged with a solution of Bichloride of mercury, 1:3,000.

Cadavers should be wrapped in sheets wrung out of Bichloride of mercury, 1:1,000, or Carbolic acid 5 per cent. solution. Cremation is always advisable. If this cannot be done, they should be placed in a tight coffin and surrounded with twice their weight of freshly-burned lime.

Disinfection of Special Objects.

Mattresses, which have been deeply infected by discharges, should be subjected to the action of steam under pressure. If this cannot be employed they should be destroyed by fire. Bedsteads and all wood-work in the room should be cleaned with solutions of Bichloride of Mercury (1:1000), metal objects being cleaned with Carbolic acid or Formalin. Clothing which has been exposed may be disinfected either by steam under pressure or Formaldehyd gas. Letters by tearing off one corner of the envelope and introducing by means of a pipette several drops of a strong Formalin solution. They should then be placed in a tightly-closed box in which there is an excess of Formalin, and allowed to remain for at least six hours. Books, which have not been opened, may be regarded as disinfected after the ordinary use of Formaldehyd gas. If they have been handled, however, by patients or attendants, each page must be carefully turned and sprinkled with a few drops of pure Formalin. They should then be placed in a tight box and treated in the same manner as letters or other mail matter. Money may be disinfected either by boiling or by immersion in one of the chemical solutions; paper money by exposure to the action of Formaldehyd gas. Vehicles which have been used for transferring patients suffering from a contagious disease should be exposed to the action of Formaldehyd gas in a tightly-closed chamber. If this is not possible, all cushions and draperies must be immersed in one of the chemical solutions, and all wood-work thoroughly cleaned with Bichloride of mercury or Carbolic acid.

Carpets and rugs, unless repeatedly and deeply infected, need not be removed for steam disinfection, the action of Formaldehyd being sufficient to render them innocuous.

A careful study of the different sources of infection in the various communicable diseases will enable the physician to adopt the proper physical and chemical agents to prevent their dissemination. In typhoid fever, the urine, sputum, and fæces; in diphtheria, the sputum and nasal discharges; in pneumonia, the sputum; in tuberculosis, sputum, urine, and fæces, according to the location of the lesion; in plague, the fæces, all discharges, etc. As before stated, success depends upon thoroughness and the proper choice of the agents.

CHAPTER XXXII.

THE OPSONIC METHOD OF TREATMENT.

OF recently discovered therapeutic methods not one is exciting any greater interest experimentally and clinically than is the opsonic treatment. Although not yet fully developed, the information now at hand is sufficient to force us to believe that it will, to use Wright's own phrase, prove to be medicine's "most valuable asset." Unfortunately, the system is still in its experimental stage. This being the case, much of the work must remain in the hands of pathologists and bacteriologists of high technical skill and experience. The practice of the treatment demands long hours in the laboratory. The results so far indicate that the time spent in the investigation will prove an inestimable boon to humanity, and will eventually rob the infections of their terrors.

The **opsonins** are *bodies* contained in the blood serum. They have been so-called because they act upon the bacteria in such a way as to prepare them for incorporation and destruction by the polymorphonuclear leucocytes. They are of colloidal nature, and are believed to be formed in the muscles. They are thermolabile, by which we mean they are destroyed by exposing the serum containing them to a temperature of 37° C. for fifteen minutes. In serum dried at 23° C. they are much more resistant to heat. In this state they are known to retain their functional activity after two years, and an exposure to a temperature of 120° C. impairs their power to but a slight degree (Noguchi).

A lowered opsonic index favors infection. Conversely an increase of the same gives the subjects increased resistance. The possible contention that the lowered index is the cause and not the result of the infection has been determined positively by actual experiments and clinical observations.

A very important question in opsonic therapy is that of the specificity of the opsonins. To answer this proposition in the affirmative we must assume that the blood contains a specific opsonin for each variety of bacterium—an assumption that is in the highest degree absurd in the present state of our knowledge. Experiments which have apparently proven that after the opsonic power of the blood serum has been exhausted to certain micro-organisms it still remains active as to others are now known to have been performed with faulty technique. The belief at present is that there is in normal serum a substance or body which we call "preopsonin," from which under stimulation by certain bacteria there can be split off the

particular opsonin for the bacteria against which protection is desired. In the blood serum of infected individuals it is believed that actual specific opsonins exist as the result of the above-mentioned stimulation of the "preopsonin."

Definition of the Opsonic Index.—The opsonic index is a term used to indicate the functional measure of the blood serum to prepare bacteria for ingestion and destruction by the phagocytes. The opsonic index of the normal individual has been placed arbitrarily at 1.0, *i. e.*, unity. Patients with lowered susceptibility may present an opsonic index anywhere from 0.9 to 0.1. Those with increased resistance exhibit a high opsonic index, *i. e.*, from 1.1 upwards. The reader should bear in mind that variations of single points in the decimal of the index are of importance.

The Determination of the Opsonic Index.—The formula for the opsonic index is determined by the following ratio:

$$\frac{\text{Opsonic content of unit volume of the patient's blood serum.}}{\text{A normal person's.}}$$

In actual practice, we prepare serum from a normal individual; serum from the patient whose opsonic index is to be determined; blood cells thoroughly freed by washing and centrifugalization from the blood serum in which they normally float; and, finally, an emulsion of the bacteria against which the immunity of the patient is to be determined. Let us suppose that we are interested in the staphylococcus. A proper mixture of blood cells, bacterial emulsion and serum is made, incubated for fifteen minutes at a temperature of 37° C., spread on a slide and stained. The preparation is then examined under a $\frac{1}{12}$ inch oil-immersion objective. The number of staphylococci in 100 leucocytes is then counted. Let us assume that in the healthy serum 500 bacteria are found in 100 leucocytes; in the case of the serum under test but 375. Following out the formula at the beginning of this paragraph, we have the opsonic index as related to staphylococci,

$$\frac{375}{500}$$

which, reduced to decimals, gives us 0.75 as the patient's opsonic index for this particular bacterium.

The technique for the determination of the opsonic index is not difficult, but is tedious and demands considerable care. With strict attention to details, observers should get results which correspond very closely with each other. The apparatus required—the microscope excepted—is not expensive; indeed, all of it is readily obtainable by any practitioner. The time required for the estimate of the index is such that in the present state of opsonic therapy general practitioners will act wisely if they asso-

ciate with themselves in their investigation and clinical observations an experienced bacteriologist.*

Bacterial Vaccines.—By this term is meant a suspension of killed bacteria in normal salt solution. If properly prepared, they should be free from clumps.

Positive and Negative Phases.—Following the hypodermic administration of a bacterial vaccine appropriate to the infected individual, there follows a lowering of the opsonic index. This condition is known as the "*negative phase*." This persists for but a short time, when there ensues an elevation of the index above the original point, to which condition the name "*positive phase*" has been applied. When the latter has reached its maximum, we have what is called "*the crest of the positive phase*." This maximum of the positive phase may continue for many days, even weeks, and this period is called "*the positive phase plateau*." The duration of the plateau will vary with the individual and the micro-organism under observation.

The positive and negative phases cannot be recognized excepting by determinations of the opsonic index if a proper dose of the bacterial vaccine has been administered. Clinically, these phases give no evidence of their existence unless the dose of vaccine has been too large, in which case the patient's general condition will be aggravated.

If the patient receive a second injection of the vaccine before the negative phase terminates, there will ensue a still greater depression of the opsonic index, and this to the detriment of the patient. If the second injection is given during the positive phase, there will be an accumulation of positive phases (which is the aim of opsonic therapy), though even here there will be produced a relative negative phase.

Taking tuberculin treatment as an illustration of the preceding remarks, we find that the negative phase present is rarely sufficient to produce disturbances of pulse and temperature in properly treated cases. In some, however, the negative phase persists, and this result may indicate (1), that the case is not suited to opsonic therapy; (2) that the dose of vaccine was too large; or (3) simply a peculiarity of the case. Before assuming that the case is unsuited to opsonic therapy, a second injection should be tried in a few weeks, when, if the negative phase still persists, the treatment should be abandoned. An aggravated negative phase due to

* Those who are so situated as to be obliged to conduct their observations unassisted, will find Dr. R. W. Allen's little work on *The Opsonic Method of Treatment* about all they will require for the pursuance of their studies. The author has succeeded in getting all the reliable data pertaining to the subject within the small compass of 138 pages. His literary style is excellent, and his expressions remarkably free from technicalities which might confuse the novice. The only possible criticism to be offered concerning Dr. Allen's volume is his enthusiasm as to the future of opsonic therapy. His description of the details of the method of obtaining the opsonic index is remarkable for its lucidity.

large dosage may readily be corrected by the administration of minimal doses at subsequent injections. As to the third possibility, a second injection a few weeks later reveals the state of affairs and the patient progresses favorably.

Dosage of Bacterial Vaccines.—Experience has demonstrated that we cannot fix an arbitrary dosage of the killed bacteria, for the proper quantity will vary not only for the different micro-organisms, but also according to the susceptibility of individuals. Initial doses should always be the minimal quantity. As to repetition, it is always better to wait longer than necessary than to give a second injection prematurely.

The Vaccine to Be Used.—Bacterial vaccines may be divided into two classes, viz.: “stock” vaccines and “personal” or “autogenous” vaccines. A “stock” vaccine is one made with bacteria taken from individuals suffering with the identical disease which we aim to cure. “Stock” vaccines in considerable variety are now obtainable from biological laboratories. “Autogenous” or “personal vaccines” are those made from cultures of bacteria obtained from the patient under treatment. It is universally admitted that the best results are obtained from the use of “autogenous” vaccines. There are good and sufficient reasons for not always using the latter, as in cases in which the illness is of such a serious nature that we cannot spare the time required, those in which the preparation of the vaccine is a matter of weeks and even months, those in which the infection is of great chronicity and the virulence of the bacteria has been greatly reduced, and, finally, in the case of infection by bacteria which are well defined and are not members of a family group.

In many cases it is good practice to proceed at first with stock vaccines, the “autogenous” being prepared in the meantime. In cases of mixed infection, the satisfactory results are obtainable from autogenous vaccines only.

Administration of the Vaccine.—Needless to say, the injection of bacterial vaccines should be carried out with all attention to aseptic details. The hands of the operator, the hypodermic syringe, and the skin of the patient should be scrupulously clean. The average initial dose for each vaccine will be mentioned in subsequent paragraphs dealing with the opsonic treatment of special infections. A good general rule in this particular is to err always on the side of too small rather than too large dosage.

Local reaction sometimes follows the injection. One can never say *a priori* when this will take place. It is possible to administer the vaccine several times without any untoward local consequences, and then for some unexplainable reason violent local reaction takes place. Allen recommends as the site of choice “the right abdomen about one-half inch above the anterior superior spine of the ilium and about one-half inch internal to it.

If a good fold of skin be raised and the puncture made at the spot indicated, the inoculum will lie one and one-half to two inches internal to the anterior spine, and any reaction will cause a minimum of discomfort." Attention to details is especially important, for any unfortunate consequences ensuing upon a new system of treatment is apt to bring undeserved discredit upon the operator.

Diagnostic and Prognostic Value of the Opsonic Index in Tuberculosis.—Observations made by Wright and his followers show that the opsonic index in tuberculous patients ranges from 0.4 to 0.9. Urwick found it above 1.0 in 25 out of 33 cases. In one instance it reached 2.6. Allen, commenting upon these remarkable discrepancies, says: "It will be observed that in all the walking cases except one a much higher index was recorded at 1 P.M. than at 9 A.M., and that this rise bears no obvious relation to rise of temperature, whereas in resting cases the index is practically constant, and either at or below unity throughout the day. This is taken to indicate that in walking cases there occurs a process of auto-inoculation by absorption of extremely minute doses of tubercular toxin by the very vascular lung tissue. How minute the dose is, the shortness of the negative phase (two or three hours) indicates. The process thus exactly resembles the succession of negative and positive phases which is induced by a series of tuberculin injections.

"Confirmation of this view is afforded by the like results which we shall see later are produced by surgical manipulations of a tubercular joint. It would thus appear to be generally true that in pulmonary phthisis, the index is above 1.0 in slight early cases; the index is variable in acute cases; the index is below 1.0 in chronic cases."

So far as the information at our disposal is concerned, we are led to believe that a low index precedes infection. A low index is also probable for some time after the supposed cure of a case of pulmonary tuberculosis.

An abnormally high index is to be accepted as indicative of an active infection.

It should be the physician's duty in all cases to make several observations of the opsonic index. A varying index is indicative of active infection and a series of auto-inoculations. According to Allen: "The non-occurrence of a high or fluctuating index in patients acutely ill is very strong evidence against a diagnosis of tuberculosis, and lends support to such alternative diagnoses as malignant disease of the lung, chronic bronchitis and emphysema, bronchiectasis, general debility or gonorrhoeal arthritis."

Clinically, we have known for a long time that the cases of pulmonary tuberculosis which do badly are those presenting marked variations in temperature, and it is these also which exhibit violent fluctuations in the opsonic index. The beneficent effect of rest in bed is likewise well

known, and it has been discovered that such rest steadies the index. By treatment in bed we may steady the index and convert the course of the case into one of chronicity.

Tuberculin Therapy.—The treatment of tuberculosis by tuberculin is greatly assisted by auxiliary measures, as rest, fresh air, feeding, etc. The tuberculin must be administered in very small doses. When there is a mixed infection, as by the bacillus of tuberculosis and the pyogenic cocci, an autogenous vaccine is necessary for the best results.

Much of the successful tuberculin therapy in the past was practiced before the discovery and development of the opsonic theory. The latter has served to demonstrate the cause of the early failures. Clinically, reactions occurring during the negative phase have been made evident by rise of temperature, rapid pulse, and general aggravation of symptoms. Clinical experience of Trudeau and others also taught us before the discovery of the opsonins that these reactions were undesirable, and could be avoided by the administration of minimal doses. Wright and his followers insist, however, that much better results are obtainable if the tuberculin is administered under the guidance of examinations for the opsonic index. They insist, and are here in accordance with all observers, that the initial dose should be a minimal one, *i. e.*, $\frac{1}{10000}$ to $\frac{1}{5000}$ of a milligramme. The patient must be kept in bed to insure against fresh auto-inoculations. The index must be taken daily that we may determine the passing of the negative phase and the attainment of the crest of the positive phase. In this way we have an absolutely accurate way for determining the correct dosage. Two or three days after the crest of the positive phase has been reached is usually the time for a second injection. If there is any doubt it should be resolved in favor of postponement. Allen presents the following golden rules for following the tuberculin treatment:

"1. Never inject without first having made a series (two or three) of estimations to ensure the absence of auto-inoculations, and so minimize the risk of injection during a positive phase.

"2. Estimate the index frequently after the first injection in order to ascertain the amplitude and duration of the negative phase, the positive response, and so the proper dosage.

"3. Never subsequently inject 'blind,' *i. e.*, without doing the index the day before. Many mistakes will be obviated by following this rule.

"4. Increase the dose slowly, yet sufficiently to secure each time a proper reaction.

"5. Do not become discouraged; many cases seem to improve only after four or five doses. If improvement ceases even with greatly increased doses, try change of air, give one or two smaller doses, then stop for a month or two, and begin again.

"6. When cure has been apparently effected, continue for a few doses more, reducing the dose each time and prolonging the interval."

Staphylococcal Infections.—Opsonic treatment in this connection has given the best results in acne, sycosis, furunculosis and ulcers. The initial dose is usually 250,000,000 organisms, which may be increased by gradations to 500,000,000 or even to 750,000,000. The average intervals between injections range from fourteen to twenty-one days. The negative phase following the first injection is usually characterized by a fresh crop of suppurative foci, which, however, is short lived. In some bad cases as large doses as 1,750,000,000 micro-organisms have been given at intervals of two weeks. Treatment usually requires a period of six to eight months.

Streptococcic Infections.—Thus far, the results in streptococcic infections have not been brilliant, though some few cases treated with wonderful success have been reported. This portion of the subject is one of great importance, and subsequent investigations will doubtless solve the problems successfully.

Gonococcal Infections.—The initial dose in gonococcal infections is 50,000,000, which may be increased to 250,000,000 by gradations at successive injections. Good results have been reported in the treatment of gonorrhœal complications, and old cases of pus tubes, gonorrhœal arthritis, etc.

INDEX.

ABIES nigra in chronic bronchitis, 560
 Ablution, 1166
 Abscess, cerebral, 851
 in typhoid fever, 30
 of the cornea, 1133
 of the lung, 591
 of the spleen, 785
 subdiaphragmatic, 499
 Abscesses and fissures about the *alæ nasi*, 524
 Acanthoma, 1083
 Acetanilid in influenza, 61
 in sciatica, 893
 Achylia gastrica, 385
 Achillodynia, 897
 Acne, Antimonium crud. in, 1091
 Antimonium tart., 1091
 Arsenicum alb. in, 1091
 bromatum in, 1091
 iod. in, 1092
 Baryta carb. in, 1092
 Belladonna in, 1092
 Crotalus in, 1092
 Graphites in, 1092
 Kali bromatum in, 1092
 Nitric acid in, 1092
 Nux vomica in, 1092
 Repertory, 1091
 Selenium in, 1092
 Sepia in, 1092
 Silicea in, 1092
 Sulphur in, 1092
 Rosacea, 1089
 Variolaformis, 1090
 Vulgaris, 1087
 Aconite in acute bronchitis, 552
 in active pulmonary congestion, 583
 in acute catarrhal enteritis, 389
 in acute catarrhal pharyngitis, 301
 in acute laryngitis, 544
 in acute nephritis, 685
 in acute poliomyelitis, 865
 in acute rhinitis, 522
 in asthma, 578
 in cerebral hyperæmia, 835
 in convulsions, 955
 in dengue, 43
 in dysentery, 133
 in endocarditis, 621
 in epistaxis, 526
 in erythema multiforme, 1016
 in facial neuralgia, 905
 in facial paralysis, 902
 in fever, 7
 in gout, 237
 in hæmatemesis, 351
 in hæmaturia, 714
 in hæmoptysis, 568
 in headaches, 975
 in heart diseases, 564
 in insanity, 100

Aconite in interstitial nephritis, 696
 in measles, 77
 in meningitis, 841
 in mumps, 96
 in nervous diseases, 817
 in neuritis, 886
 in pericarditis, 611
 in perihepatitis, 499
 in pleurisy, 597
 in purpura, 784
 in relapsing fever, 37
 in rheumatic fever, 106
 in scarlatina, 65
 in sciatica, 893
 in spinal meningitis, 860
 in splenic diseases, 786
 in tetanus, 157
 in tic douloureux, 907
 in yellow fever, 14
 Acromegaly, 799
 Actea racemosa in arthritis deformans, 229
 in angina pectoris, 672
 in cerebro-spinal fever, 47
 in chorea, 967
 in delirium tremens, 266
 in endocarditis, 622
 in facial neuralgia, 905
 in headaches, 976
 in heart diseases, 656
 in hysteria, 942
 in insanity, 1001
 in nervous diseases, 816
 in neuralgia, 889
 in pericarditis, 613
 in rheumatic fever, 107
 Actinomycosis, 287
 Acupuncture in sciatica, 896
 Acute ascending paralysis, 867
 bronchitis, 551
 catarrhal enteritis, 387
 laryngitis, 543
 pharyngitis, 300
 tonsillitis, 294
 hepatitis, 500
 mania, 1004
 myelitis, 861
 poliomyelitis anterior, 864
 suppurative perihepatitis, 499
 toxic gastritis, 354
 Addison's disease, 797
 Adenoids, post-nasal, 299
 Adenoma sebaceum, 1080
 Adonis vernalis, 646
 Adrenalin in epistaxis, 525
 in hæmaturia, 715
 in hæmoptysis, 568
 in hay fever, 538
 Æsculus hippocastanum in follicular pharyngitis, 308
 in heart diseases, 651

- Affections of the nasal septum, 541
 Affusion, 1167
 Agurin in diabetes insipidus, 226
 Agaricine, 647
 in chorea, 967
 in hyperidrosis, 1093
 in night sweats, 195
 Agaricus in paralysis agitans, 963
 in splenic diseases, 786
 in tics, 959
 in typhoid fever, 22
 in typhus fever, 35
 Ailanthus in scarlatina, 67
 Ainhum, 1067
 Air, subcutaneous injection of, in sciatica, 892
 Alæ nasi, abscesses and fissures about the, 524
 Albumen water, 492
 Alcohol in pneumonic fever, 56
 in typhoid fever, 15
 in typhus fever, 33
 Alcohol injections in tic douloureux, 909
 Alcoholic headaches, 978
 indulgence in myocarditis, 675
 intoxication, 260
 neuritis, 883
 Alcoholism, 260
 acute, Apomorphia in, 260
 Aromatic spirits in, 260
 Arsenicum in, 260
 Castor oil in, 260
 Nux vomica in, 260
 chronic, 260
 Capsicum in, 262
 hypnotics in, 262
 Aleuronat bread, 220
 Alkalis in hyperchlorhydria, 382
 Allium cepa in acute rhinitis, 522
 in chronic bronchitis, 559
 Aloes in dysentery, 133
 Aloin in constipation, 418
 Alopecia, 1100
 areata, 1100
 cicatrizzata, 1102
 seborrhoica, 1100
 Alstonia scholaris in malaria, 140
 Alumina in atrophic rhinitis, 536
 in chronic catarrhal pharyngitis, 307
 in insanity, 1001
 in lead poisoning, 273
 in locomotor ataxia, 874
 in nervous diseases, 818
 in prurigo, 1020
 Ammonia acetatis, liquor, in delirium tremens, 266
 Ammonium carb. in cerebro-spinal fever, 48
 in chronic bronchitis, 560
 in erythema, 1014
 in heart diseases, 656
 in passive congestion of the liver, 497
 in scarlatina, 67
 in variola, 90
 iodide in chronic bronchitis, 561
 mur. in acute catarrhal pharyngitis, 301
 in chronic laryngitis, 545
 in erythema nodosum, 1017
 in jaundice, 512
 phos. in chronic bronchitis, 561
 Amygdala persica in acute catarrhal pharyngitis 300
 Amyl nitrite in angina pectoris, 669
 in asthma, 573
 in epistaxis, 526
 in hæmoptysis, 568
 in headaches, 975
 in heart diseases, 651
 Amytrophic lateral sclerosis, 877
 Anæmia, post-influenzal, 62
 acute hæmorrhagic, 777
 pernicious, 773
 Arsenic in, 773
 bone marrow in, 774
 remedies in, 774
 Anacardium in bulbar palsy, 859
 in heart diseases, 656
 in insanity, 1000
 in lichen, 1055
 in neurasthenia, 652
 in pericarditis, 613
 in urticaria, 1019
 Anæmias, symptomatic, 777
 Anæmic headaches, 976
 Analgesics in influenza, 61
 in neuritis, 884
 in rheumatic fever, 106
 Anasarca, 718
 Anchylostomiasis, 258
 Ander's system in obesity, 211
 Analeptics, 649
 Aneurysm of the aorta, 677
 Ergotin in, 678
 Gelatin in, 678
 Potassium iodide in, 677
 surgical treatment of, 679
 Tuffnell's treatment of, 677
 Angio-neurotic œdema of nose, 539
 Angina Ludovici, 305
 Angina pectoris, 669
 Amyl nitrite in, 669
 Arsenicum in, 671
 Aurum mur. in, 672
 Bryonia, 672
 Cactus, 670
 Cimicifuga in, 672
 Glonoin in, 669
 Iodides in, 671
 Kalmia in, 672
 Latrodectus in, 672
 Lilium tigrin. in, 672
 Lobelia in, 670
 Morphia in, 670
 Nux vomica in, 672
 pain of, 670
 Spigelia in, 672
 simplex, 300
 Angio keratoma, 1061
 neurotic œdema, 982
 Angioma, 1078
 serpiginosum, 1080
 Anidrosis, 1094
 Animal parasites, diseases due to, 249
 Anorexia, 349
 Cinchona in, 349
 Nux vomica in, 349
 Orexine in, 349
 hysterical, 934
 Anterior urethritis, acute, 723
 Anthrax, 153
 hot poultices, 154
 local excision, 154

- Anthrax, prophylaxis, 153
 remedies for, 154
 Antimonium arsen. in chronic bronchitis, 559
 crudum in acute catarrhal gastritis, 353
 in acne, 1091
 in eczema, 1031
 in erythema nodosum, 1017
 in impetigo, 1035
 in keratosis, 1060
 in urticaria, 1019
 in vomiting, 349
 iod. in chronic bronchitis, 558
 in pneumonic fever, 58
 in tuberculosis, 192
 Sulphurat auratum in chronic bronchitis, 559
 tart. in acne, 1091
 in active pulmonary congestion, 583
 in acute bronchitis, 554
 in chronic bronchitis, 558
 in delirium tremens, 266
 in influenza, 62
 in variola, 89
 in yellow fever, 41
 Antipyretics, 7
 Antipyrin in epistaxis, 525
 in urticaria, 1019
 Antistreptococcic serum in ulcerative endocarditis, 625
 Antitoxin, arthralgias from, 113
 administration, 111
 immunization by, 109
 rashes, 113
 Aphasia, 854
 Aphonia, hysterical, 935
 Aphthæ, remedies for, 287
 Aphthous stomatitis, 283
 sore throat, 304
 Apis mellifica in acute catarrhal pharyngitis, 300
 in acute follicular pharyngitis, 303
 in diphtheria, 116
 in erysipelas, 144
 in erythema multiforme, 1016
 in erythema nodosum, 1017
 in heart diseases, 657
 in mumps, 97
 in pericarditis, 612
 in pleurisy, 597
 in rheumatic fever, 107
 in scarlatina, 66
 in spinal meningitis, 861
 in tubercular meningitis, 839
 in urticaria, 1018
 in uvulitis, 292
 in variola, 90
 Apocynum cannabin. in cirrhosis of the liver, 503
 as a diuretic, 721
 in acute nephritis, 685
 in heart diseases, 657
 Apomorphia in acute bronchitis, 554
 in alcoholic intoxication, 260
 in asthma, 582
 in pneumonic fever, 58
 in vomiting, 349
 Apoplexy, 842
 Appendicitis, 441
 Appendicostomy in mucous colitis, 427
 Aranea diadema in malaria, 140
 Argentum iod. in acute catarrhal pharyngitis, 301
 nitricum in acute catarrhal enteritis, 389
 in atrophic rhinitis, 536
 in chronic laryngitis, 546
 in epilepsy, 923
 in facial neuralgia, 905
 in gastric pain, 345
 in gastric ulcer, 358
 in hyperchlorhydria, 382
 in insanity, 1000
 in locomotor ataxia, 874
 in nervous diseases, 815
 in renal colic, 698
 in stomatitis, 286
 in yellow fever, 42
 Arnica in dysentery, 133
 in erysipelas, 145
 in erythema, 1014
 in gout, 237
 in heart diseases, 657
 in intra-cranial hæmorrhage, 845
 in meningitis, 841
 in nephrolithiasis, 700
 in neuritis, 886
 in psoriasis, 1008
 in purpura, 783
 in sciatica, 895
 in splenic diseases, 786
 in typhoid fever, 23
 Arsenic in leucocythæmia, 775
 Arsenical poisoning, acute, 354
 chronic, 274
 Arsenicism, 274
 Arsenicum album in acne, 1091
 in acute alcoholism, 260
 in acute catarrhal enteritis, 389
 in acute catarrhal gastritis, 353
 in acute nephritis, 686
 in angina pectoris, 671
 in asthma, 578
 in carbunculus, 1037
 in cholera Asiatica, 53
 in chorea, 969
 in chronic catarrhal gastritis, 375
 in chronic nephritis, 691
 in dengue, 43
 in diabetes, 222
 in dysentery, 133
 in eczema, 1032
 in emphysema, 589
 in endocarditis, 623
 in erysipelas, 144
 in facial neuralgia, 905
 in gastric pain, 344
 in gastric ulcer, 358
 in hæmaturia, 714
 in heart diseases, 650
 in herpes facialis, 1040
 in herpes progenitalis, 1041
 in herpes zoster, 1039
 in insanity, 1000
 in malarial fever, 139
 in nephrolithiasis, 700
 in nervous diseases, 820, 822
 in neuralgia, 890
 in neuritis, 887
 in pemphigus, 1043
 in pericarditis, 612
 in pernicious anemia, 773

- Arsenicum in phosphaturia, 718
 in pityriasis, 1050
 in pleurisy, 597
 in psoriasis, 1047
 in purpura, 783
 in scarlatina, 66
 in sciatica, 894
 in seborrhœa, 1085
 in splenic diseases, 786
 in stomatitis, 287
 in typhoid fever, 23
 in typhus fever, 36
 in tuberculosis, 193
 in ulcerative endocarditis, 624
 in urticaria, 1018
 in uvulitis, 292
 in variola, 93
 in yellow fever, 41
 bromatum in acne, 1091
 hydrogenisatum, 714
 iod. in acne, 1092
 in atrophic rhinitis, 536
 in chronic bronchitis, 558
 in chronic rhinitis, 533
 in emphysema, 589
 in follicular pharyngitis, 308
 in prurigo, 1020
 in tuberculosis, 192
 Artemisia vulgaris in epilepsy, 924
 Arterio-sclerotic pain, 345
 Arthritic fever, 102
 Arthritis in scarlatina, 71
 deformans, 227
 Actea racemosa in, 229
 Benzoic acid in, 230
 Carbolic acid in, 231
 Causticum in, 230
 climate in, 228
 Colchicum in, 230
 Collinsonia in, 230
 diet in, 227
 electricity in, 229
 Guaiacum in, 230
 Ledum in, 230
 passive congestion treatment of, 229
 Pulsatilla in, 230
 Sabina in, 230
 Sepia in, 230
 urine in, 228
 X-ray in, 1162
 Arthropathy, 972
 Arum triphyllum in scarlatina, 66
 in stomatitis, 287
 Asafoetida in chronic bronchitis, 560
 in flatulence, 347
 in hysteria, 942
 in nervous diseases, 819
 in splenic diseases, 786
 in syphilis, 167
 Ascariasis, 249
 Ascaris lumbricoides, 249
 Ascending paralysis, acute, 867
 Ascites in cirrhosis of the liver, 503
 surgical treatment of, 304
 Asclepias tuberosa in perihepatitis, 499
 in pericarditis, 613
 in pleurisy, 598
 Asparagus in ascites, 500
 Aspidospermine in asthma, 581
 Aspirin in neuritis, 886
 Aspirin in rheumatic fever, 103
 Astacus flavivatus in urticaria, 1019
 Asthma, 571
 Aconite in, 578
 Amyl nitrite in, 573
 Apomorphia in, 582
 Arsenicum in, 578
 Aspidospermine in, 581
 Atropia in, 580
 Belladonna in, 580
 Caffeine in, 574
 climate in, 575
 clothing in, 576
 Cuprum in, 581
 diet in, 571
 electricity in, 576
 Grindelia in, 581
 Hydrocyanic acid in, 581
 Ipecac in, 580
 Kali bi. in, 578
 Kali hyd. in, 576
 Kola in, 172
 Lobelia in, 580
 Moschus in, 582
 Nitro paper in, 572
 Nux vomica in, 579
 Quinine in, 581
 paroxysms of, 571
 Sajodin in, 578
 Strychnia in, 579
 Sulphur in, 579
 Tobacco in, 572
 Asterias rubens in psoriasis, 1048
 Astringents in intestinal hæmorrhage, 428
 Ataxia, hereditary cerebellar, 877
 Friederich's, 876
 Ataxic paraplegia, 875
 Atelectasis pulmonum, 590
 Atmosphere of room in acute bronchitis, 552
 Atresia of the lachrymal punctum, 1124
 Atropia in asthma, 580
 in constipation, 273
 in enteralgia, 435
 in erysipelas, 144
 in gastric ulcer, 359
 in hæmoptysis, 568
 in hyperchlorhydria, 383
 in intestinal obstruction, 449
 in night sweats, 195
 in renal colic, 697
 in whooping-cough, 100
 Atrophia unguinum, 1105
 Atrophies, 1066
 Atrophic rhinitis, 533
 pharyngitis, 308
 Atrophy of the liver, acute yellow, 497
 Phosphorus in, 498
 remedies in, 498
 Aural catarrh, chronic, 1147
 vertigo, 971
 Aurum arsenicos in tuberculosis, 193
 brom. in heart diseases, 641
 iod. in heart diseases, 651
 metallicum in cerebral hyperæmia, 835
 in exophthalmic goiter, 794
 in insanity, 1000
 in nervous diseases, 816
 mur. in angina pectoris, 673
 in atrophic rhinitis, 536
 in chronic nephritis, 691

- Aurum mur. in cirrhosis of the liver, 504
 in diabetes, 222
 in emphysema, 589
 in headache, 975
 in heart diseases, 651
 in interstitial nephritis, 696
 in syphilis, 167, 170
 Auto transfusion, 779
 Autogenous vaccines, 1181
 Autumnal fever, 8

 BACTERIURIA, 763
 Bacterial vaccines, 1182
 Badiaga in heart diseases, 652
 Baked flour, 492
 Balanitis, 741
 Balanoposthitis, 741
 Balneology, 1172
 Balsam of Peru in chronic bronchitis, 560
 in tuberculosis, 193
 Banting system in obesity, 205
 Baptisia in dysentery, 133
 in fever, 7.
 in insanity, 1003
 in perihepatitis, 499
 in relapsing fever, 37
 in stomatitis, 286
 in tuberculosis, 193
 in typhoid fever, 20
 in typhus fever, 35
 in variola, 89
 Barley jelly, 492
 water, 491
 Bartholini's gland, abscess of, 752
 Baryta carb. in acute bronchitis, 555
 in acne, 1092
 in hereditary syphilis, 170
 in intra-cranial hæmorrhage, 846
 in keratosis, 1060
 in lichen, 1055
 iod. in goiter, 790
 in mumps, 97
 Bathing in chronic gastric catarrh, 373
 in Malta fever, 201
 in pneumonic fever, 55
 Bath treatment in typhoid fever, 16
 Beard, eczema of the, 1027
 Bed-bath in typhoid fever, 18
 Bed-sores in typhoid fever, 29
 prevention of, 861
 treatment of, 862
 Bednar's aphthæ, 284
 Beef-juice, 492
 Belladonna in acne, 1092
 in active congestion of liver, 496
 in active pulmonary hyperæmia, 583
 in acute bronchitis, 553
 in acute catarrhal enteritis, 389
 in acute follicular tonsillitis, 302
 in acute laryngitis, 544
 in acute poliomyelitis, 865
 in acute rhinitis, 522
 in asthma, 580
 in catarrhal pharyngitis, 300
 in cerebral hyperæmia, 835
 in cerebro-spinal fever, 47
 in convulsions, 955
 in delirium tremens, 266
 in endocarditis, 622
 in enteralgia, 436
 in epilepsy, 923
 in epistaxis, 526
 in erysipelas, 144
 in erythema, 1014
 in erythema nodosum, 1017
 in facial neuralgia, 905
 in facial paralysis, 902
 in fever, 7.
 in follicular tonsillitis, 295
 in furunculosis, 1036
 in gastric pain, 344
 in gout, 237
 in headache, 975
 in hyperidrosis, 1093
 in infantile diarrhœa, 405
 in insanity, 998
 in locomotor ataxia, 875
 in measles, 77
 in meningitis, 841
 in migraine, 981
 in mumps, 97
 in nephrolithiasis, 700
 in nervous diseases, 820
 in neuralgia, 889
 in neuritis, 886
 in orchitis, 97
 in perihepatitis, 499
 in pityriasis, 1050
 in purpura, 784
 in rabies, 153
 in scarlatina, 64
 in sciatica, 895
 in special meningitis, 861
 in stomatitis, 286
 in tubercular meningitis, 839
 in typhus fever, 35
 in variola, 89
 in vomiting, 349
 in whooping-cough, 100
 in yellow fever, 41
 Bellis perennis in splenic diseases, 786
 Benzoic acid, arthritis deformans, 230
 in chronic bronchitis, 561
 in heart diseases, 652
 in nephrolithiasis, 700
 Berberis in lichen, 1055
 in locomotor ataxia, 875
 in nephrolithiasis, 700
 in renal colic, 698
 Beri-beri, 883
 Bile ducts, malignant disease of the, 506
 Biliary colic, 513
 Bismuth in gastric pain, 345
 in chronic gastric catarrh, 376
 in vomiting, 349
 Bismuth subgallate in flatulence, 347
 Black tongue, 291
 Blackwater fever, 140
 Crotalus in, 141
 Ipecac in, 141
 Phosphorus in, 141
 relationship of, to malaria and Quinine, 140
 Bladder, paralytic, 761
 tuberculosis of the, 756
 "Bleeding into veins" in intra-cranial hæmorrhage, 844
 Blenorrhœa of the lachrymal sac, 1125
 Blepharitis marginalis, 1119
 Blepharospasm, 1123

- Blisters in endocarditis, 621
 in rheumatic fever, 102
 Blood, diseases of the, 770
 Borax in aphthous stomatitis, 283
 in nervous diseases, 820
 in stomatitis, 285
 Bovista in purpura, 784
 Bowel, irrigation of the, 402
 regulation of the, in chronic catarrhal
 gastritis, 374
 Brain, diseases of the, 834
 Breads, diabetic, 221
 Breast-feeding, 474
 milk, the factors influencing composition
 of, 476
 Bromides in epilepsy, 917
 Bromidrosis, 1094
 Bromine in goiter, 790
 in chronic bronchitis, 561
 in diphtheria, 117
 Bronchi, diseases of the, 551
 Bronchiectasia, 563
 Creosote in, 564
 coughing down hill, 565
 inhalations in, 564
 remedies for, 565
 tracheal injections in, 565
 Bronchitis, acute, 551
 Aconite in, 552
 Antimonium tart. in, 554
 Apomorphia in, 554
 atmosphere of room, for, 552
 Baryta carb. in, 555
 Belladonna in, 553
 Bryonia in, 553
 Carbo veg. in, 555
 Ferrum phos. in, 552
 Heroin in, 553
 Ipecac in, 554
 Kali bichr. in, 555
 Mercurius in, 555
 Phosphorus in, 554
 Rumex in, 553
 sweating in, 552
 Terpin hydrate in, 554
 Veratrum viride in, 552
 chronic, 555
 Abies nigra in, 560
 Allium in, 559
 Ammonium carb. in, 560
 iod. in, 561
 phos. in, 561
 Antimonium in, 559
 iod. in, 558
 sulph. in, 559
 tart. in, 558
 Arsenicum iod. in, 558
 Asafetida in, 560
 Balsam of Peru in, 560
 Benzoic acid in, 561
 Bromine in, 561
 Carbolic acid in, 557
 Causticum in, 561
 Chelidonium in, 562
 climate in, 556
 clothing and, 557
 Copaiva in, 560
 Creosote in, 561
 Cubebs in, 560
 diet in, 557
 Bronchitis, chronic, Drosera in, 562
 Eucalyptus in, 560
 Grindelia robusta in, 560
 Gummi ammoniacum in, 560
 heart and, 556
 inhalations in, 557
 Iodine in, 558
 Ipecac in, 559
 Kali bichr. in, 561
 brom. in, 561
 carb. in, 561
 hydr. in, 558
 Lactuca virosa in, 562
 Lithium iod. in, 558
 Phosphorus in, 562
 Rumex in, 562
 Sanguinaria in, 562
 Senega in, 560
 Spongia in, 561
 Stannum iod. in, 558
 Terebene in, 558
 Terebinthina in, 560
 Terpin hydrate in, 559
 influenzal, 62
 plastic, 562
 Broncho-pneumonia, 53
 in measles, 79
 Bryonia alba in active congestion of the liver,
 496
 in acute bronchitis, 553
 in acute catarrhal gastritis, 353
 in angina pectoris, 672
 in cerebro-spinal fever, 47
 in chronic gastric catarrh, 375
 in constipation, 419
 in constipation of infants, 422
 in dengue, 43
 in endocarditis, 622
 in epistaxis, 526
 in fever, 7
 in influenza, 61
 in headache, 975
 in insanity, 1003
 in jaundice, 512
 in measles, 77
 in meningitis, 842
 in nervous diseases, 822
 in pericarditis, 612
 in perihepatitis, 499
 in pleurisy, 597
 in pneumonic fever, 57
 in relapsing fever, 37
 in rheumatic fever, 107
 in sciatica, 895
 in seborrhœa, 1085
 in spinal meningitis, 861
 in splenic diseases, 787
 in stomatitis, 287
 in typhoid fever, 20
 Bufo rana in epilepsy, 924
 in pemphigus, 1044
 Bulbar paralysis, 858
 CACTUS in angina pectoris, 670
 in endocarditis, 622
 in hæmoptysis, 570
 in heart disease, 652
 in pericarditis, 613
 Caffeine, 648
 in asthma, 574

- Caffeine as a diuretic, 721
 Calabar bean in flatulence, 347
 Caisson disease, 878
 Calcareo in eczema, 1032
 in emphysema, 589
 in epilepsy, 924
 in epistaxis, 526
 in goiter, 790
 in insanity, 1001
 in intertrigo, 1015
 in keratosis pilaris, 1060
 in migraine, 981
 in nephrolithiasis, 700
 in psoriasis, 1048
 in rachitis, 248
 in tubercular meningitis, 839
 in tuberculosis, 193
 fluorica in goiter, 790
 in keratosis, 1060
 phos. in emphysema, 589
 in keratosis pilaris, 1060
 in insanity, 1001
 in tuberculosis, 192
 in rachitis, 248
 Calcium chloride in hæmophilia, 782
 in intestinal hæmorrhage, 428
 Callositas, 1058
 Calomel as a diuretic, 720
 in passive congestion of the liver, 497
 Caltha in pemphigus, 1044
 Camphor, 649
 in acute rhinitis, 522
 in cholera, 62
 in collapse, 404
 in measles, 78
 in scarlatina, 66
 in urticaria, 1018
 in variola, 91
 in yellow fever, 41
 Camphoric acid in night sweats, 195
 Camphorated oil in typhus fever, 35
 Canchalagua in malaria, 140
 Canities, 1097
 Cannabis indica in delirium tremens, 266
 in insanity, 1002
 in migraine, 981
 in nervous diseases, 823
 in pericarditis, 612
 in pruritus, 1069
 Cantharis in acute nephritis, 685
 in chronic nephritis, 690
 in diphtheria, 117
 in dysentery, 132
 in eczema, 1031
 in hæmaturia, 714
 in herpes zoster, 1038
 in insanity, 999
 in pemphigus, 1043
 in pleurisy, 597
 in pericarditis, 612
 in rabies, 153
 in renal colic, 698
 in yellow fever, 42
 Capsicum, 649
 in alcoholism, 262
 in acute catarrhal pharyngitis, 301
 in acute follicular tonsillitis, 303
 in dysentery, 134
 in malaria, 139
 in oedema of uvula, 292
 Capsicum in splenic diseases, 787
 Carbo veg. in acute bronchitis, 555
 in dyspnoea, 195
 in flatulence, 346
 in splenic diseases, 787
 in typhoid fever, 23
 in variola, 91
 Carbolic acid in abscess and fissures about
 the alæ nasi, 524
 in anthrax, 154
 in arthritis deformans, 231
 in cerebro-spinal fever, 46
 in chronic bronchitis, 557
 in eczema, 1032
 in erysipelas, 143
 in gastric cancer, 366
 in psoriasis, 1048
 in rheumatic fever, 105
 in tetanus, 156
 in vomiting, 349
 Carbonic acid gas in whooping-cough, 101
 Carboneum oxygenisatum in herpes zoster,
 1038
 Carbunculus, 1036
 Arsenicum in, 1037
 Lachesis in, 1037
 Carcinoma, X-ray in, 1159
 of the lungs, 595
 of the oesophagus, 312
 of the rectum, 438
 of the stomach, 364
 Carbolic acid in, 366
 Condurango in, 366
 Creosote in, 366
 Hydrastis in, 367
 Methylene blue in, 365
 Phosphorus in, 366
 surgical treatment of, 367
 Cardiac failure in typhoid fever, 27
 in pneumonic fever, 59
 liver, 496
 stimulants in pneumonic fever, 59
 tonics, 638
 Carduus marianus in jaundice, 511
 in splenic diseases, 787
 in cirrhosis of the liver, 504
 Casca cortex, 648
 Cascara sagrada in constipation, 417
 Caseous tonsillitis, 299
 Castanea vesca in whooping-cough, 100
 Cataract, 1140
 Catarrhal conjunctivitis, acute, 1127
 chronic, 1127
 Catarrhal gastritis, bathing in, 373
 acute, 352
 Antimonium crudum in, 353
 Arsenicum in, 353
 Bryonia in, 353
 diet in, 352
 emetics in, 352
 Gelsemium in, 354
 Ipecac in, 353
 Nux vomica in, 353
 chronic, 369
 Arsenicum in, 375
 Bismuth preparations in, 376
 Bryonia in, 375
 Cinchona in, 376
 Creosote in, 376
 Hydrastis in, 375

- Catarrhal gastritis, chronic, Kali bichr., 376
 Ignatia in, 375
 lavage in, 373
 laryngitis, acute, 543
 Aconite in, 301
 Ammon. mur., 301
 Amygdal persica in, 301
 Apis mellifica in, 301
 Argentum iod. in, 301
 Belladonna in, 300
 Gelsemium in, 300
 Guaiacum in, 300
 Lachesis in, 301
 Phytolacca in, 301
 Rhatania in, 301
 pharyngitis, acute, 300
 chronic, Alumina in, 307
 Hydrastis canadensis in, 306
 Kali bich. in, 306
 Nux vomica in, 306
 Penthorum sedoides in, 306
 Pyoktanin in, 300
 remedies in, 307
 Sanguinaria nitrate in, 306
 Causticum in acute poliomyelitis, 867
 in arthritis deformans, 230
 in bulbar palsy, 859
 in chorea, 967
 in chronic bronchitis, 561
 in epilepsy, 925
 in facial paralysis, 902
 in intra-cranial hæmorrhage, 846
 in nervous diseases, 821
 Ceanothus Americanus in splenic diseases, 787
 Cedron in facial neuralgia, 906
 in malaria, 140
 in neuralgia, 890
 Central galvanization, 804
 Cerebellar ataxia, hereditary, 877
 Cerebral abscess, 851
 anæmia, 836
 embolism and thrombosis, 846
 hyperæmia, 834
 Aconite in, 835
 Aurum in, 835
 Belladonna in, 835
 Glonoin in, 835
 Sulphur in, 835
 Veratrum viride in, 835
 pachymeningitis, 837
 paralyses of infants and children, 856
 tumors, 848
 Cerebro-spinal fever, 43
 Ammonium carb. in, 48
 Belladonna in, 47
 Bryonia in, 47
 Cimicifuga in, 47
 Cicuta virosa in, 48
 Collapsic symptoms in, 48
 Cuprum aceticum in, 48
 diet in, 44
 Gelsemium in, 47
 joint lesions in, 64
 hot baths in, 45
 lumbar, puncture in, 45
 meningitis, 43
 nervous sequelæ of, 48
 petechial type of, 48
 Potassium iodide in, 48
 Cerebro-spinal fever, serum treatment of, 48
 Veratrum viride in, 47
 Cerumen, inspissated, 1144
 Chaulmoogra oil in leprosy, 200
 Chalazion, 1120
 Chamomilla in enteralgia, 436
 in intertrigo, 1015
 in jaundice, 512
 in insanity, 1003
 Chancre, 160
 of the lids, 1122
 Charbon, 153
 Chelidonium in chronic bronchitis, 562
 in facial neuralgia, 905
 in jaundice, 511
 in seborrhœa, 1086
 Chest pains, remedies for, 196
 in tuberculosis, 196
 Chicken-pox, 94
 Chilblain, 1013
 China (*vide* cinchona)
 Chininum arsenicosum in hyperchlorhydria, 382
 in tuberculosis, 194
 sulph. in erythema, 1014
 in erythema multiforme, 1019
 in erythema nodosum, 1017
 in urticaria, 1019
 Chionanthus in jaundice, 511
 Chloral hydrate, 812
 in eczema, 1032
 in scarlatina, 65
 Choloralamid, 811
 Chloasma, 1065
 Chloroform in convulsions, 953
 Chlorosis, 770
 cyclamen in, 773
 diet in, 770
 epistaxis in, 526
 Ferrum in, 771
 Graphites in, 772
 Helonias in, 773
 Ignatia in, 772
 Platinum in, 772
 Pulsatilla in, 772
 rest in, 770
 Cholecystitis in typhoid fever, 28
 Cholelithiasis, 512
 prophylaxis of, 513
 Cholera Asiatica, 49
 Arsenicum alb. in, 53
 Camphor in, 52
 Cuprum in, 52
 diet in, 51
 disinfection of stools, 49
 general prophylaxis of, 49
 Jatropha curcas in, 53
 prophylaxis to be applied by individuals, 50
 Secale cornutum in, 53
 urinary symptoms in, 53
 Veratrum album in, 53
 vomiting in, 52
 warm bathing in, 52
 water infection, 49
 morbus, 390
 Choreia, 965
 Actea rac. in, 967
 Agaricine in, 967
 Arsenic in, 969

- Choreia, Causticum in, 967
 Cina in, 968
 Cuprum in, 969
 electricity in, 969
 Ferrum redactum in, 967
 Hyoscyamus in, 968
 Ignatia in, 967
 Iodine in, 968
 Mygale in, 968
 Naphtholinum in, 968
 Nux vomica in, 968
 of soft palate, 294
 pregnancy and, 969
 Pulsatilla in, 968
 sleeplessness in, 966
 sleep treatment of, 966
 Stramonium in, 968
 Strychnia phos. in, 969
 Veratrum viride in, 968
 Zincum in, 968
 Zizia in, 968
 Chronic acid in chronic follicular pharyngitis, 307
 in hypertrophic rhinitis, 531
 Chromidrosis, 1094
 Chromophytosis, 1110
 Chronic bronchitis, 555
 catarrhal gastritis, 369
 catarrhal pharyngitis, 305
 deep anterior urethritis, 735
 diarrhoea, 387
 follicular pharyngitis, 307
 gonorrhoeal prostatitis, 744
 interstitial hepatitis, 500
 intestinal catarrh, 391
 myelitis, 863
 nasal catarrh, 526
 rheumatism, 231
 urethritis, 732
 Chrysarobin in psoriasis, 1046
 Cicatrix, 1077
 Cicuta virosa, in epilepsy, 924
 in cerebro-spinal fever, 48
 in nervous diseases, 823
 Cimicifuga (see *Actea* rac.)
 Cina in chorea, 968
 in whooping cough, 101
 Cinchona in acute catarrhal enteritis, 388
 in anorexia, 349
 in cholelithiasis, 517
 in chronic gastric catarrh, 376
 in dengue, 43
 in facial neuralgia, 906
 in septicæmia, 148
 in hæmatemesis, 351
 in jaundice, 512
 in malaria, 139
 in purpura, 783
 in splenic diseases, 787
 in tuberculosis, 193
 in typhoid fever, 24
 in yellow fever, 41
 Circulatory system, diseases of the, 609
 vertigo, 970
 Cirrhosis of the liver, 500
 Apocynum can., 503
 Ascites in, 503
 Aurum mur. in, 504
 Carduus mar. in, 504
 diet in, 501
 Cirrhosis, flatulence in, 502
 Mercurius in, 504
 pain in, 502
 Phosphorus in, 504
 Ptelea trifoliata in, 504
 Cistus canadensis in herpes facialis, 1040
 Clavus, 1058
 Clematis erecta in herpes facialis, 1010
 Clergymen's sore-throat, 307
 Cleansing the nasal cavities, 534
 Cleanliness in typhoid fever, 11
 Climate in asthma, 575
 in chronic bronchitis, 556
 in chronic rheumatism, 232
 Clematis in orchitis, 97
 Climato-therapy in tuberculosis, 191
 Clothing in acute poliomyelitis, 866
 in asthma, 576
 and chronic bronchitis, 557
 in chronic rhinitis, 528
 of the insane, 995
 in valvular lesions, 633
 in whooping-cough, 99
 Coal-tar derivatives as analgesics, 832
 Cocaine in epistaxis, 525
 in heart diseases, 655
 in vomiting of cholera, 52
 Coccus cacti in whooping-cough, 100
 Cocculus indicus in nervous diseases, 823
 Codeia in cough, 194
 in gastric pain, 344
 in hæmoptysis, 566
 Colchicine in arthritis deformans, 230
 in dysentery, 133
 in endocarditis, 622
 in facial neuralgia, 906
 in gout, 236
 in heart diseases, 654
 in nervous diseases, 824
 in pericarditis, 611, 612
 in pleurisy, 598
 in rheumatic fever, 105
 Colic in lead poisoning, 273
 gall-stone, 512
 Colica mucosa, 423
 Cold applications in pericarditis, 610
 in sciatica, 891
 in tubercular meningitis, 838
 douche, 805
 exposure to, 280
 mitten rub, in typhoid fever, 18
 spinal douche, 806
 Collapse in infantile diarrhoea, 404
 Collapsic symptoms in cerebro-spinal fever, 48
 Collargol in septicæmia, 146
 Collargolum in anthrax, 154
 Collinsonia in arthritis deformans, 230
 in constipation, 420
 Colloid degeneration of the skin, 1071
 Colocynth in acute catarrhal enteritis, 389
 in dengue, 43
 in dysentery, 133
 in enteralgia, 435
 in sciatica, 895
 Coma, diabetic, 224
 Comedo, 1087
 Comocladia in eczema, 1032
 Composition of woman's milk, 474
 Condurango in gastric cancer, 366
 Congestion of the liver, active, 494

- Congestion of the liver, Belladonna in, 496
 Bryonia in, 496
 diet in, 495
 Nux vomica in, 496
 pain in, 495
 Vipera in, 496
 passive, 496
 Ammonium carb. in, 497
 Calomel in, 497
 Digitalis in, 496
 Conical cornea, 1137
 Conium in cough, 195
 in heart diseases, 654
 in mumps, 97
 Conjunctiva, diseases of the, 1126
 Conjunctivitis, acute catarrhal, 1127
 chronic catarrhal, 1127
 diphtheritic, 1131
 follicular, 1131
 in measles, 79
 membranous, 1131
 Constipation, in insanity, 992
 Aloin in, 418
 Bryonia in, 419
 Cascara in, 417
 Collinsonia in, 420
 diet in, 409, 412
 electricity in, 417
 enemata in, 415
 exercise, 410
 Glycerin in, 415
 habit in, 411
 Hydrastis in, 420
 in jaundice, 509
 laxatives in, 411
 in lead poisoning, 273
 in Malta fever, 202
 Phosphorus in, 375
 Pulsatilla in, 375
 massage in, 414
 Nux vomica in, 375, 419
 Opium in, 419
 Purgative enema in, 415
 Purgatives in, 411
 regulation of diet in, 371
 regulation of the bowels in, 374
 rest and exercise in, 372
 rest in, 408
 Sepia in, 408, 420
 sphincter ani, dilatation in, 416
 Sulphur in, 420
 in typhoid fever, 27
 in infants, Bryonia in, 422
 diet in, 421
 Graphites in, 422
 Hydrastis in, 422
 Lycopodium in, 423
 Magnesia in, 422
 Nux vomica in, 423
 Ox-gall in, 422
 Sulphur in, 423
 Constitutional diseases, 203
 Contractures, hysterical, 936
 Convallaria, 645
 in endocarditis, 622
 Convalescence of the insane, 997
 Convulsions, Aconite in, 955
 Belladonna in, 953
 Chloroform in, 953
 Cuprum in, 955
 Convulsions, Glonoin in, 955
 hysterical, 935
 Ignatia in, 955
 Morphia in, 953
 Opium in, 955
 Cooking, improper, 318
 Copaiba in chronic bronchitis, 560
 in pemphigus, 1044
 Corallium rubrum in whooping-cough, 100
 Cornea, abscess of the, 1133
 conical, 1137
 diseases of the, 1133
 Corneal opacities, 1136
 Cornu cutaneum, 1058
 Cornus florida in malaria, 140
 Coronilla, 648
 Cotoin in diarrhoea, 196
 Corrosive sublimate poisoning, 354
 Cough (see also bronchitis, acute and chronic)
 Conium in, 195
 "down-hill," in bronchiectasia, 565
 Heroin in, 194, 553
 Hyocyamus in, 194
 hysterical, 944
 Laurocerasus in, 195
 Opium in, 195
 in measles, 78
 in pericarditis, 611
 Terpin in, 194
 in tuberculosis, 194
 Counter-irritation in acute poliomyelitis, 864
 in facial paralysis, 900
 in sciatica, 892
 Cowperitis, acute, 742
 Cow's milk, 479
 modification of, 480
 Cratægus oxyacantha, 648
 Creosote in bronchiectasia, 564
 in chronic bronchitis, 261
 in chronic gastric catarrh, 376
 in diabetes, 223
 in gastric cancer, 366
 in seborrhoea, 1086
 in vomiting, 349
 Creosotum in eczema, 1033
 Crotalus in acne, 1092
 in blackwater fever, 141
 horridus in hæmaturia, 714
 in scarlatina, 67
 in ulcerative endocarditis, 624
 in variola, 91
 in yellow fever, 41
 Croton tiglium in acute catarrhal enteritis, 389
 in eczema, 1030
 in herpes progenitalis, 1041
 in variola, 90
 Crounotherapy, 1172
 Crusta lactea, 1084
 Cryptic tonsillitis, 295
 Cubebs in chronic bronchitis, 560
 Culex fatigans, 44
 Cuprum in asthma, 581
 in cholera asiatica, 52
 in chorea, 969
 in convulsions, 955
 in epilepsy, 923
 in measles, 78
 in mumps, 97
 in nervous diseases, 324

- Cuprum in whooping-cough, 100
 arsenicosum in acute catarrhal enteritis, 389
 in acute myelitis, 863
 in tics, 959
 in typhoid fever, 21
 aceticum in cerebro-spinal fever, 48
 in scarlatina, 66
 Curare in keratosis, 1060
 Cyanotic liver, 496
 Cyclamen in chlorosis, 773
 Cystic degeneration of the kidneys, 708
 hæmorrhage in yellow fever, 42
 Cystitis, 747
 chronic gonorrhœal, 753
- DACRYOADENITIS, 1126
 acute, 1124
 chronic, 1124
- Dacryops, 1124
- Danubian fever, 201
- Deficient gastric mobility, 383
- Dengue, 42
 culex fatigans a cause of, 42
- Delirium in typhoid fever, 28
 tremens, 263
 Actea racemosa in, 266
 Alcoholics in, 264
 Arsenicum in, 266
 Belladonna in, 266
 Cannabis indica in, 266
 diet in, 265
 heart stimulants in, 266
 hydrotherapy in, 265
 Hyoscyamus in, 266
 hypnotics in, 265
 Lachesis in, 266
 Liquor ammoniæ acetatis in, 266
 restraint in, 264
 Strychnia in, 266
- Depilatories, 1099
- Dermatalgia, 1067
- Dermatitis, 1056
 calorica, 1056
 herpetiformis, 1044
 medicamentosa, 1057
 papillaris, capellitti, 1103
 repens, 1033
 venenata, 1056
- Diabetes insipidus, 225
 hygienic treatment of, 226
 remedies in, 226
 thirst in, 225
- mellitus, 213
 Arsenicum album in, 222
 Aurum mur. in, 222
 clothing in, 213
 Creosote in, 223
 oat cure in, 218
 opotherapy in, 224
 Phosphoric acid in, 222
 Phosphorus in, 233
 Picric acid in, 223
 Plumbum in, 223
 prophylaxis of, 217
 Pruritus in, 225
 Salicylates in, 224
 Syzygium jambolanum in, 223
 Uranium nitrate in, 222
 Urotropin, 224
- Diabetes mellitus, von Noorden's diet list, 214
- Diabetic coma, 224
- Diaphoretics, 722
- Diarrhœa, 387
 chronic, 391
 in infants, 397
 in Malta fever, 202
 in tuberculosis, 196
 remedies in, 196
 in typhoid fever, 28
 in variola, 94
 of infants, remedies in, 405
- Diathetic conditions of the insane, 995
- Dibothriocephalus latus, 251
- Diet in acute catarrhal enteritis, 387
 in acute catarrhal gastritis, 352
 in active congestion of liver, 495
 during the 2d year, 490
 from 9 to 12 months, 490
 from 12 to 16 months, 490
 from 16 to 24 months, 491
 in acute nephritis, 682
 in acute gastric diseases, 320
 in arthritis deformans, 227
 in asthma, 575
 in chlorosis, 770
 in cholera Asiatica, 51
 in chronic bronchitis, 557
 in chronic diarrhœa, 392
 in chronic gastric catarrh, 371
 in chronic gastric disorders, 321
 in chronic nephritis, 688
 in cirrhosis of the liver, 501
 in constipation, 409, 412
 in constipation of infants, 421
 in deficient gastric mobility, 383
 in diarrhœa of infants, 399
 in diphtheria, 115
 in dysentery, 131
 in emphysema, 588
 in endocarditis, 620
 in epilepsy, 913
 in exophthalmic goiter, 792
 in fever, 5
 in flatulence, 346
 in gall-stone disease, 514
 in gout, 236
 in hyperchlorhydria, 380
 in increased vascular pressure, 674
 in interstitial nephritis, 694
 in intestinal obstruction, 449
 in intra-cranial hæmorrhage, 845
 in irregular gout, 238, 239
 in locomotor ataxia, 873
 in pericarditis, 610
 in pleurisy, 596
 in migraine, 979
 in mucous colitis, 424
 in mumps, 96
 in myocarditis, 661
 in neurasthenia, 949
 in neuritis, 884
 in pneumonic fever, 56
 in rachitis, 245
 in relapsing fever, 38
 in rheumatic fever, 163
 in scarlatina, 64
 in scurvy, 242
 in tuberculosis, 188
 in typhoid fever, 12

- Diet in typhus fever, 33
 in valvular diseases, 632
 in yellow fever, 40
 lists in gastric disorders, 325
- Digitalis, 638
 in epilepsy, 924
 in exophthalmic goiter, 794
 in hæmoptysis, 570
 in jaundice, 512
 in nervous diseases, 825
 in passive congestion of the liver, 496
 in pericarditis, 611
 in scarlatinal nephritis, 67
 in tuberculosis, 194
- Dietetics in stomach disorders, principles of, 319
- Digestive ferments, 322
- Digitalone, 639
- Dilatation of the stomach, 376
- Dioscorea in dysentery, 134
 in enteralgia, 436
- Diphtheria, 108
 Antitoxin administration, 111
 Apis mellifica in, 116
 Cantharis in, 117
 diet in, 115
 disinfection after, 110
 immunization, 109
 intubation, 119
 Kali bichrom. in, 117
 Lachesis in, 117
 Liquor calcis chlorinatæ in, 117
 local treatment of, 114
 medicinal treatment of, 115
 Mercurius biniod in, 116
 corrosiv. in, 116
 cyanat. in, 116
 protoid. in, 116
 paralysis after, 118
 Phytolacca in, 117
 prophylaxis of, 108
- Diphtheritic conjunctivitis, 1131
- Disinfection, 1175
 after scarlatina, 74
 after typhus fever, 32
 in scarlatina, 63
 of special objects, 1179
- Distomiasis, 255
- Disturbances of motility, 1141
- Diuretics, 720
 Apocynum, 721
 Caffeine, 721
 Calomel, 720
 Potassium bitartrate, 721
 Saccharum lactis, 721
 Scoparius, 722
 Squill, 722
- Dobell's solution, formula for, 70
 in atrophic rhinitis, 534
- Dracunculosis, 258
- Drink restriction in myocarditis, 659
- Drip sheet, 1168
- Drosera in chronic bronchitis, 562
 in cough, 78
 in whooping-cough, 99
- Dry diet in obesity, 209
- Duboisia in paralysis agitans, 963
- Ductless glands, diseases of the, 770
- Dulcamara in acute myelitis, 863
 in enteralgia, 436
- Dulcamara in herpes facialis, 1040
- Duodenum, ulcer of the, 439
- Dysentery, 130
 abdominal applications in, 131
 Aconite in, 133
 Aloes in, 133
 Arnica in, 133
 Arsenicum album in, 133
 Baptisia in, 133
 Cantharis in, 132
 Capsicum in, 134
 Colchicum in, 133
 Colocynth in, 133
 diet in, 131
 Dioscorea in, 134
 Ferrum phos. in, 133
 hæmorrhagic, 135
 Hamamelis in, 133
 Ipecacuanha in, 134
 local treatment of, 131
 Mercurius corrosivus in, 132
 Mercurius dulcis in, 132
 pain in, 131
 prophylaxis, 130
 Rhus tox in, 133
 stimulation in, 131
- Dyspepsia, syphilis and, 317
 toxæmic, 316
 tuberculosis and, 317
- Dyspnœa, Carbo veg. in, 195
 Ipecac in, 195
 in tuberculosis, 195
- EAR, diseases of the, 1143
- Ears, eczema of the, 1026
- Eating habits, 316
 correction of, 369
- Ebstein system in obesity, 206
- Echinacea in fever, 195
 in septicæmia, 148
 in stomatitis, 283
 in ulcerative endocarditis, 624
- Echinococcus of the lungs, 595
- Ecchymoses, subconjunctival, 1133
- Ectropion, 1123
- Eczema, 1020
 Antimonium crud. in, 1031
 Arsenicum in, 1032
 Aurum in, 1026
 Calcarea carb. in, 1032
 Cantharis in, 1031
 capitis, 1025
 Carbolic acid in, 1032
 Chloral in, 1032
 Comocladia in, 1032
 Creosotum in, 1033
 Croton tig. in, 1030
 Graphites in, 1031
 Hydrocotyle in, 1032
 Mercurius in, 1030
 Mezereum in, 1031
 of the beard, 1027
 of the face, 1026
 of the ears, 1026
 of the external ear, 1143
 of the eyelids, 1026
 of the hands, 1027
 of the head, 1025
 of the genitals, 1028
 of the lids, 1118

- Eczema of the lips, 1026
 of the legs, 1028
 of the nails, 1028
 of the palm, 1027
 Picric acid in, 1033
 Ranunculus bulb. in, 1031
 repertory, 1029
 Rhus in, 1030
 Edebohl's operation, 692
 Education a cause of hysteria, 928
 Egyptian chlorosis, 258
 Elaterium as a hydragogue cathartic, 722
 Electricity in acute poliomyelitis, 865
 in arthritis deformans, 229
 in asthma, 576
 in chorea, 969
 in constipation, 417
 in deficient gastric motility, 385
 in diseases of the nervous system, 800
 in diseases of the stomach, 337
 in exophthalmic goiter, 792
 in facial paralysis, 901
 in locomotor ataxia, 869
 in migraine, 982
 in neurasthenia, 948
 in neuralgia, 889
 in neuritis, 885
 in paralysis agitans, 962
 in progressive muscular atrophy, 879
 in sciatica, 891
 Electrodes, gastric, 338
 Electrolysis in goiter, 789
 for superfluous hair, 1098
 Elephantiasis, 257
 Elongated uvula, 293
 local treatment, 293
 remedies, 293
 surgical treatment, 293
 Embolism, cerebral, 846
 Emetics in acute catarrhal gastritis, 352
 Empysema, 583
 Arsenic in, 589
 iod. in, 589
 Aurum mur. in, 589
 Calcarea carb. in, 589
 phos. in, 589
 diet in, 588
 exercises in, 585
 Kali hyd. in, 589
 Phosphorus in, 589
 Quebracho in, 589
 Empyema, 605
 Emunctories, condition of, in fever, 3
 Endocarditis, acute, 617
 simple, 617
 Aconite in, 621
 Actea rac. in, 622
 Arsenicum in, 623
 Belladonna in, 622
 blisters in, 621
 Bryonia in, 622
 Cactus in, 622
 Colchicum in, 622
 Convallaria in, 622
 diet in, 620
 Laurocerasus in, 619
 rest in, 619
 Rhus tox. in, 622
 Spigelia in, 621
 Veratrum viride in, 621
 Endocarditis, ulcerative, 623
 Arsenicum in, 624
 Antistreptococcic serum in, 625
 Crotalus in, 624
 Echinacea in, 624
 Lachesis in, 624
 Naja in, 624
 Quinine sulph. in, 624
 Secale in, 624
 Enemata in constipation, 415
 in intestinal obstruction, 450
 Enteralgia, 434
 Atropia in, 435
 Belladonna in, 436
 Chamomilla in, 436
 Colocynth in, 435
 Dioscorea in, 436
 Dulcamara in, 436
 electricity in, 436
 Nux vomica in, 436
 Plumbum in, 436
 Rhus tox. in, 436
 Strychnia in, 436
 Enteric fever, 8
 Enteritis, acute catarrhal, 387
 Aconite in, 389
 Argentum nitricum in, 389
 Arsenicum in, 389
 Belladonna in, 389
 Cinchona in, 389
 Colocynth in, 389
 Croton tig. in, 389
 Cuprum ars. in, 389
 diet in, 387
 Ferrum phos. in, 389
 Gelsemium in, 389
 Nux vomica in, 390
 pain in, 388
 Phosphoric acid in, 390
 Podophyllum in, 390
 Tannigen in, 391
 membranous, 423
 Enteroclysis in mucous colitis, 426
 Enteroptosis, 430
 Enterorrhagia, 427
 Entropion, 1123
 Epididymitis, 739
 Epilepsy, 912
 Artemisia vulgaris in, 924
 Argentum nitricum in, 823
 Belladonna in, 923
 Bromides in, 917
 Bufo rana in, 927
 Calcarea in, 924
 Causticum in, 925
 Cicuta in, 924
 Cuprum in, 923
 diet in, 913
 Digitalis in, 924
 Flechsigs treatment of, 922
 Hydrocyanic acid in, 924
 Nux vomica in, 923
 Oenanthe in, 923
 recreation in, 915
 reflex origin of, 915
 salt restriction in, 922
 sexual hygiene in, 915
 Silicea in, 924
 status epilepticus, 917
 surgical treatment of, 925

- Epileptic vertigo, 971
 Epiphægus in neurasthenia, 952
 Episcleritis, 1137
 Epistaxis, 524
 Aconite in, 526
 Adrenalin in, 525
 Amyl nitrite in, 526
 Antipyrin in, 525
 Belladonna in, 526
 Bryonia in, 526
 Calcium chloride in, 126
 chlorosis in, 526
 Cocaine in, 525
 Glonoïn in, 526
 Hydrastinine in, 526
 in measles, 79
 plugging the nares, 525
 typhoid fever, 28, 526
 Epithelial tumors, X-ray in, 1157
 Epithelioma of the lids, 1121
 of the skin, 1080
 Equisetum in hæmaturia, 715
 Ergot in hæmatemesis, 350
 in hæmoptysis, 569
 in intestinal hæmorrhage, 429
 poisoning, remedies for, 276
 Ergotine in aneurysm, 678
 Erigeron in hæmoptysis, 569
 Erysipelas, 141
 Apis mellifica in, 144
 Arnica in, 145
 Arsenicum in, 144
 Belladonna in, 144
 Graphites in, 144
 incisions in, 143
 local treatment of, 142
 prophylaxis, 141
 Rhus tox. in, 144
 Stramonium in, 144
 Sulphur in, 145
 Veratrum viride in, 145
 Erythema, 1012
 ab igne, 1012
 Ammonium carb. in, 1014
 Arnica in, 1014
 Belladonna in, 1014
 Chininum sulph. in, 1014
 Hyoscyamus in, 1014
 pernio, 1013
 Rhus tox. in, 1014
 scarlatiniforme, 1013
 intertrigo, 1014
 induratum, 1074
 multiforme, 1015
 Aconite in, 1016
 Apis mell. in, 1016
 Chininum sulph. in, 1016
 Rhus tox. in, 1016
 Salicylic acid in, 1016
 nodosum, 1016
 Ammonium mur. in, 1017
 Antimonium crudum in, 1017
 Apis in, 1017
 Belladonna in, 1017
 Chininum sulph. in, 1017
 Erythrasma, 1111
 Erythrol tetranitrate, 650
 Erythromelalgia, 897
 Erythroxylon coca in neurasthenia, 952
 Eucalyptus in chronic bronchitis, 560
 Eucalyptus in fever, 8
 in malaria, 140
 Eupatorium perf. in dengue, 43
 in influenza, 61
 in malarial fever, 139
 in relapsing fever, 37
 Euphorbium in erysipelas, 145
 Euphrasia in acute rhinitis, 523
 Eustachian catarrh, acute, 1147
 Exercise and digestion, 318
 in cholelithiasis, 515
 in chronic rhinitis, 528
 in constipation, 410
 in emphysema, 585
 in myocarditis, 659
 Exophthalmic goiter, 791
 Aurum in, 794
 diet in, 792
 Digitalis in, 794
 electricity in, 792
 hydrotherapy in, 791
 Iodine in, 794
 Lycopus in, 793
 remedies in, 794
 Sulphur in, 794
 surgery in, 793
 Extubation, 123
 Eye, diseases of the, 1118
 Eyes in variola, 93
 Eyelids, eczema of the, 1026

 FACE, eczema of the, 1026
 Facial hemiatrophy, 910
 hemihypertrophy, 910
 neuralgia, 903
 Aconite in, 905
 Actea rac. in, 903
 Argentum nitr. in, 905
 Arsenicum in, 905
 Belladonna in, 905
 Cedron in, 906
 Chelidonium in, 905
 Cinchona in, 906
 Colchicum in, 906
 Gelsemium in, 906
 Kalmia in, 906
 Magnesium phos. in, 906
 Mezereum in, 906
 Platina in, 906
 Spigelia in, 906
 Sulphur in, 906
 paralysis, 900
 Aconite in, 902
 Belladonna in, 902
 Causticum in, 902
 counter-irritation in, 900
 electricity in, 901
 Gelsemium in, 902
 Hypericum in, 902
 lagophthalmos from, 901
 Fæcal impaction, 453
 Factors influencing the composition of breast-milk, 476
 Farcy, 157
 Favus, 1105
 Feeding at different ages, intervals for, 487
 in infancy and childhood, 472
 of the patients in fever, 5
 Feet, pains in the, 897
 hyperidrosis of the, 1094

- Fel bovis purificatum*, 324
Ferrum carb. in dengue, 43
 phos. in active pulmonary hyperæmia, 583
 in acute bronchitis, 532
 in acute catarrhal enteritis, 389
 in acute laryngitis, 544
 in dysentery, 133
 in fever, 8
 in hæmoptysis, 569
 in neuritis, 886
 in pneumonic fever, 57
 in rachitis, 248
 in rheumatic fever, 107
 in spinal meningitis, 860
 in tuberculosis, 192
 metallicum in splenic diseases, 787
 redactum in chorea, 967
 in chlorosis, 771
Ferments, digestive, 322
Fever, Aconite in, 7
 antipyritics in fever, 7
 Baptisia in, 7, 195
 Belladonna in, 7
 Bryonia in, 7
 Echinacea in, 195
 Eucalyptus in, 8
 feeding of the patients in, 5
 Ferrum phos. in, 8
 Gelsemium in, 8
 general remarks on the treatment of, as a symptom, 1
 Hyoscyamus in, 7
 in tuberculosis, 195
 Rhus tox. in, 7
 remedies for, 7
 Stramonium in, 7
 Veratrum viride in, 8
 ventilation of the sick-room in, 4
Fevers, 1
 and the infections, 1
 conditions of the emunctories in, 3
Fibroma of the skin, 1078
Filaria dracunculus, 258
 loa, 257
Filariasis, 256
Filix mas in tape-worm, 253
Fish-skin disease, 1063
Fissure, anal, 454
Fistula, ano-rectal, 456
 of the lachrymal gland, 714
Flat-foot, 899
Flatulence in cirrhosis of the liver, 502
 diet, 346
 Asafœtida in, 347
 Bismuth subgallate in, 347
 Calabar bean in, 347
 Carbo veg. in, 436
 Hoffmann's anodyne in, 347
 Lycopodium in, 346
 Nux vomica in, 346
 Vallidol in, 347
Flechsig treatment of epilepsy, 922
Flies as carriers of typhoid fever, 9
Floating spleen, 784
Fluke infection, 255
Fluoric acid in onychia, 1103
Fœtid rhinitis, 533
Follicular conjunctivitis, 1131
 pharyngitis, acute, 302
 Follicular pharyngitis, Apis mel. in, 303
 Belladonna in, 302
 Capsicum in, 303
 Guaiacum in, 302
 Lachesis in, 303
 Mercurius cor. in, 303
 chronic, 307
 Æsculus hippocast. in, 308
 Arsenicum iod. in, 308
 Chromic acid in, 307
 Galvano-cautery in, 307
 Iodo-glycerin in, 307
 Kali bich. in, 308
 Kali hyd. in, 308
 Nux vomica in, 308
 Sanguinaria nitrate in, 307
 Secale in, 308
 Wyethia in, 308
 tonsillitis, 295
 Belladonna in, 295
 Ignatia in, 295
 Mercurius biniod. in, 295
 Phytolacca in, 295
Folliculitis, 742
Food-poisoning, 275
 remedies for, 275
 quantity required, 331
 sterilization of the, 487
Foot and mouth disease, 285
 flat, 899
Foreign bodies in the external meatus, 1146
 in the nose, 539
 in the rectum, 453
Formalin in atrophic rhinitis, 535
 in hyperidrosis, 1093
 in septicæmia, 146
Fragilitas crinium, 1097
Frambœsia, 1081
Fränkel exercises in locomotor ataxia, 872
Freckles, 1065
Friedreich's ataxia, 876
Fruit juices, 493
Furuncle of the external canal, 1144
Furunculosis, 1036
 Belladonna in, 1036
 Hepar in, 1036
 Lachesis in, 1036
GALL-BLADDER, malignant disease of the, 506
 -stone colic, 518
 disease, 512
 Cinchona in, 517
 diet in, 514
 exercise in, 515
 massage in, 515
 mineral springs in, 516
 Olive oil in, 516
 operations in, 519
 water in, 515
Galvanization, central, 804
 of the cervical sympathetic, 804
Galvano-cautery in chronic follicular pharyngitis, 307
 in hypertrophic rhinitis, 532
Gangrene of the lungs, 593
Grangrenous stomatitis, 284
Gastrectasia, 376
Gastric catarrh, chronic, diet in, 371
 crises, 871
 disorders, diet in acute, 320

- Gastric disorders, diet in chronic, 321
 douche, 335
 electrodes, 338
 hæmorrhage, 350
 headaches, 978
 mobility, deficient, 383
 constipation in, 385
 diet in, 383
 electricity in, 383
 lavage in, 384
 remedies for, 385
 pain, 343
 Argentum nitricum in, 345
 Arsenicum in, 344
 Belladonna in, 344
 Bismuth in, 345
 Codeia in, 344
 Ignatia in, 345
 remittent fever, 8
 spray, 336
 Gastritis, acute catarrhal, 352
 acute toxic, 354
 phlegmonous, 355
 Gastro-enteric symptoms in scarlatina, 72
 intestinal disturbances in influenza, 62
 Gastropnoia, 377
 Gelatin in aneurysm, 678
 in hæmophilia, 782
 in hæmoptysis, 567
 in intestinal hæmorrhage, 25
 Gelsemium in acute catarrhal enteritis, 389
 in acute catarrhal gastritis, 354
 catarrhal pharyngitis, 300
 poliomyelitis, 865
 rhinitis, 522
 in cerebral hyperæmia, 835
 in cerebro-spinal fever, 47
 in dengue, 43
 in headache, 976
 in fever, 8
 in facial neuralgia, 906
 in facial paralysis, 902
 in heart diseases, 654
 in influenza, 61
 in jaundice, 511
 in malaria, 140
 in measles, 77
 in nervous diseases, 814
 in pruritus, 1069
 in scarlatina, 65
 in sciatica, 893
 in typhoid fever, 20
 General faradization in gastric diseases, 337
 paralysis of the insane, 1006
 Genitals, eczema of the, 1028
 Genito-urinary organs, diseases of the, 723
 Geographical tongue, 291
 remedies for, 291
 Geranium maculatum in hæmoptysis, 569
 Gin-drinker's liver, 500
 Glanders, 157
 prophylaxis, 157
 remedies for, 159
 Glaucoma, 1139
 Glonoin, 650
 in acute nephritis, 686
 in angina pectoris, 669
 in cerebral hyperæmia, 835
 in convulsions, 955
 in epistaxis, 526
 Glonoin, in hæmatemesis, 351
 in headache, 975
 in insanity, 1000
 in intra-cranial hæmorrhage, 845
 in interstitial nephritis, 696
 in migraine, 982
 in nervous diseases, 819
 in vomiting, 349
 Glossitis, 289
 acute phlegmonous, 289
 Glossodynia, 291
 Glosso-labial palsy, 858
 Anacardium in, 859
 Causticum in, 859
 Plumbum in, 859
 Glossy skin, 1067
 Gluten bread, 220
 Glycerin in constipation, 415
 tannate in relaxed uvula, 293
 Glycero-phosphates in phosphaturia, 718
 Gnaphallum in sciatica, 896
 Goiter, 788
 Baryta iod. in, 790
 Bromine in, 790
 Calcarea carb. in, 790
 fluorica in, 790
 electrolysis in, 789
 Iodine in, 789
 Phytolacca in, 790
 X-ray in, 1161
 Gonococcal infections, 1186
 opsonic treatment of, 1186
 Gonohæmia, 755
 Gonorrhœa, extra genital and metastatic, 753
 in the female, 751
 of the mouth, 755
 rectal, 754
 Gonorrhœal cervicitis, 753
 cystitis, 747
 ophthalmia, 1127
 prostatitis, acute, 742
 rheumatism, 754
 urethritis, 723
 vaginitis, acute, 752
 Gout, 235
 Aconite in, 237
 Arnica in, 237
 Belladonna in, 237
 Colchicum in, 236
 diet in, 236
 irregular, 238
 Ledum in, 237
 remedies for chronic, 238
 water drinking in, 238
 Goutiness of the stomach, 317
 Gouty pharyngitis, 309
 Granular lids, 1132
 pharyngitis, 307
 Granuloma annulare, 1083
 inguinale tropicum, 1083
 pyogenicum, 1083
 Graphites in acne, 1092
 in acute poliomyelitis, 867
 in chlorosis, 772
 in eczema, 1031
 in erysipelas, 144
 in infantile constipation, 422
 in intertrigo, 1015
 in onychia, 1103
 in seborrhœa, 1085

- Gray hair, 1097
 Grindelia in asthma, 581
 robusta in chronic bronchitis, 560
 in heart diseases, 654
 Ground-itch, 258
 Guaiacol in pleuritic pain, 596
 in tonsillitis, 296
 Guaiacum in acute catarrhal pharyngitis, 300
 in acute follicular tonsillitis, 302
 in acute laryngitis, 544
 in arthritis deformans, 230
 in gout, 237
 in tuberculosis, 193
 Guinea-worm infection, 258
 Gummi ammoniacum in chronic bronchitis, 560
 Gurgun oil in leprosy, 200
 Gyromele, 335
- HABITS**, eating, 316
 in hyperchlorhydria, 380
 regularity of, in constipation, 411
 in valvular lesions, 633
- Hæmatemesis**, 350
 Aconite in, 351
 Cinchona in, 351
 Ergot in, 350
 Glonoin in, 350
 Hydrastinine in, 350
 in scurvy, 244
 Ipecac in, 351
 surgical treatment of, 351
- Hæmatomyelia**, 882
- Hæmaturia**, 712
 Aconite in, 714
 Adrenalin in, 715
 Arsen. alb. in, 714
 Arsen. hydrog. in, 714
 Cantharis in, 714
 Crotalus in, 714
 Equisetum in, 715
 Hamamelis in, 715
 in scurvy, 244
 Nux vomica in, 714
 Phosphorus in, 714
 Rhus aromatica in, 715
 Terebinthina in, 714
- Hæmoptysis**, 568
 Aconite in, 568
 Adrenalin in, 568
 Amyl nitrite in, 568
 Atropia in, 568
 Cactus in, 570
 Digitalis in, 570
 Ergot in, 569
 Erigeron in, 569
 Ferrum phos. in, 569
 Geranium mac. in, 569
 Gelatin in, 567
 Hamamelis in, 568
 Hydrastinine in, 569
 Heroin in, 568
 Ipecac in, 568
 Lycopus in, 569
 Millefolium in, 569
 rest in, 567
 Sulphuric acid in, 568
 supra-renal extract in, 568
 Veratrum viride, 569
- Hæmoglobinuric fever**, 140
- Hæmopericardium**, 617
- Hæmophilia**, 781
 Calcium chloride in, 782
 Gelatin in, 782
 Hydrastis in, 782
 remedies in, 782
- Hæmorrhage**, intestinal, 427
 oesophageal, 311
 in pernicious anæmia, 773
 in scurvy, 244
 in scarlatina, 72
 spinal, 881
- Hæmorrhagic diathesis**, 43
 pharyngitis, remedies in, 304
- Hæmorrhoids**, 467
 internal, 469
- Haffkine's serum**, 149
- Hairy tongue**, 291
- Half bath**, 1167
- Hamamelis** in dysentery, 133
 in hæmaturia, 715
 in hæmoptysis, 568
 in purpura, 783
- Hands**, eczema of the, 1027
- Hay fever**, 536
- Hiccough**, 911
- Hirschfeld's diet** in obesity, 211
- Hirsuties**, 1097
- Head**, eczema of the, 1025
- Headache**, 973
 Belladonna in, 24
 in typhoid fever, 24
 in typhus fever, 34
 in variola, 94
- Head compress**, 1170
- Heat**, in neuralgia, 889
 in sciatica, 890
 prostration, 277
- Heart and chronic bronchitis**, 556
 in scarlatina, 71
 remedies, 651
 Aconite, 654
 Actea rac., 656
 Æsculus, 651
 Ammonium carb., 656
 Amyl nitrite, 651
 Anacardium, 656
 Apis mel., 657
 Apocynum can., 657
 Arnica, 657
 Arsenicum, 650
 Aurum brom., 651
 iod., 651
 mur. 651
 Badiaga, 652
 Benzoic acid, 652
 Cactus, 652
 Cocaine, 655
 Colchicum, 654
 Conium, 654
 Gelsemium, 654
 Grindelia, 654
 Helleborus, 653
 Hydrocyanic acid, 655
 Iodine, 655
 Moschus, 655
 Nux vomica, 657
 Phosphorus, 657
 Scutellaria, 655
 valvular lesions of the, 625

- Heel, painful, 897
 Helleborus in heart diseases, 653
 in scarlatinal nephritis, 67
 in tubercular meningitis, 839
 Helonias in chlorosis, 773
 Hepar sulphur in acute laryngitis, 545
 in acute rhinitis, 523
 in chronic laryngitis, 546
 in chronic rhinitis, 533
 in erysipelas, 145
 in furunculosis, 1036
 in intertrigo, 1015
 in onychia, 1103
 in pompholyx, 1042
 in syphilis, 168, 170
 in stomatitis, 286
 in tuberculosis, 192
 in variola, 90
 Hepatitis, acute, 500
 chronic interstitial, 500
 Hereditary cerebellar ataxia, 877
 syphilis, 169
 Heroin in cough, 194, 553
 in hæmoptysis, 566
 in whooping-cough, 101
 Heroin-mania, 270
 Herpes facialis, 1039
 Arsenicum in, 1040
 Cistus canadensis in, 1040
 Dulcamara in, 1040
 Natr. mur. in, 1040
 Sepia in, 1040
 Sulphur in, 1040
 Terebinthina in, 1040
 Urtica urens in, 1040
 progenitalis, 1040
 Arsenicum in, 1041
 Croton tiglium in, 1041
 Rhus tox. in, 1041
 zoster, 1037
 Cantharis in, 1038
 Carboneum oxygenisatum in, 1038
 Ranunculus bulbosus in, 1038
 Rhus in, 1038
 Spigelia in, 1039
 Ophthalmicus, 1118
 Herpetic pharyngitis, 304
 Apis mell. in, 305
 Capsicum in, 305
 Nux vomica in, 305
 Hexamethyldiamin in pyelitis, 703
 Hoang-nan in leprosy, 201
 Hob-nailed liver, 500
 Hoffmann's anodyne in flatulence, 347
 Hodgkin's disease, 776
 X-ray in, 1154
 Homicidal and destructive tendencies, 994
 Hookworm disease, 258
 Hordeolum, 1120
 Hot baths in cerebro-spinal fever, 45
 Hydatid disease of the kidneys, 708
 Hydragogue cathartics, 722
 Hydrastinine hydrochlorate in epistaxis, 526
 in gastric hæmorrhage, 350
 in hæmoptysis, 569
 in intestinal hæmorrhage, 429
 Hydrastis canadensis in acute rhinitis, 523
 in carcinoma of the stomach, 366
 in chronic catarrhal pharyngitis, 306
 in chronic gastric catarrh, 375
 Hydrastis canadensis in chronic rhinitis, 533
 in constipation, 420
 in gastric ulcer, 358
 in hæmophilia, 782
 in hyperchlorhydria, 383
 in infantile constipation, 422
 in jaundice, 511
 in stomatitis, 287
 in typhoid fever, 21
 Hydriatric prescription, 1164
 treatment in typhoid fever, 16
 Hydrocephalus, 853
 Hydrocotyle in eczema, 1032
 in keratosis, 1060
 in psoriasis, 1048
 Hydrocystoma, 1095
 Hydrocyanic acid in asthma, 381
 in choleraic collapse, 53
 in epilepsy, 924
 in heart diseases, 655
 in scarlatina, 66
 in tetanus, 157
 in variola, 91
 Hydronephrosis, 704
 Hydropericardium, 616
 Hydrophobia, 151
 Hydropneumothorax, 606
 Hydrotherapeutic measures, general rules
 for, 1165
 Hydrotherapy, 1162
 in acute nephritis, 684
 in acute poliomyelitis, 865
 in arthritic deformans, 228
 in chronic nephritis, 688
 in chronic rheumatism, 233
 in chronic rhinitis, 527
 in delirium tremens, 265
 in diseases of the stomach, 339
 in exophthalmic goiter, 791
 of locomotor ataxia, 871
 of nervous diseases, 805
 outfit for the practice of, 1165
 in neurasthenia, 950
 in paralysis agitans
 in relapsing fever, 37
 in scarlatina, 67
 in sciatica, 892
 in thermic fever, 278
 in tuberculosis, 179, 190
 in typhus fever, 34
 in variola, 90
 Hydrothorax, 604
 Hymenolepis nana, 251
 Hyoscyamine in paralysis agitans, 963
 Hyoscine hydrobromate, 811
 in typhoid fever, 22
 -morphia, 811
 Hyoscyamus in chorea, 968
 in cough, 194
 in delirium, 29
 in delirium tremens, 266
 in erythema, 1014
 in fever, 7
 in hysteria, 943
 in insanity, 998
 in mumps, 97
 in nervous diseases, 814
 in tics, 959
 in typhoid fever, 22
 in typhus fever, 35

- Hyperæmia of the conjunctiva, 1126
 Hyperæsthesia, hysterical, 943
 Hyperchlorhydria, 379
 Alkalis in, 382
 Argentum nitricum in, 382
 Atropia in, 383
 Chininum ars. in, 382
 diet in, 380
 habits, 380
 Hydrastis in, 383
 Ignatia in, 382
 Kali phos. in, 382
 lavage in, 382
 Lycopodium in, 382
 Magnesium phos. in, 382
 Nux vomica in, 382
 Orexine in, 383
 rest in, 380
 Robinia in, 382
 Hypericum in facial paralysis, 902
 in neuritis, 886
 Hyperidrosis, 1093
 Agaricine in, 1093
 Belladonna in, 1093
 Formalin in, 1093
 Sulphur in, 1093
 remedies for, 1094
 Hyperplastic rhinitis, 529
 Hyperpyrexia in rheumatic fever, 108
 Hypertrophic catarrh, chronic, 529
 Hypertrophy of the tonsils, 297
 excision in, 298
 remedies for, 298
 Hypnotics, 810
 in alcoholism, 262
 Hypodermoclysis in typhoid fever, 15
 Hypodermatic treatment of syphilis, 163
 Hysteria, 927
 Actea racemosa in, 942
 Asafœtida in, 942
 Ignatia in, 941
 Moschus in, 941
 Potassium bromide in, 943
 Sumbul in, 943
 Valerian in, 942
 Hysterical anorexia, 934
 aphonia, 935
 contractures, 936
 convulsions, 935
 hyperæsthesia, 943
 lethargy, 944
 melancholia, 943
 pains, 935
 paralysis, 935
 spines, 934
 syncope, 944
 tympanites, 935
 vertigo, 971
 Hystero-epilepsy, 943
 ICE-CRADLE, in typhoid fever, 19
 -bag in intestinal hæmorrhage, 428
 -water enemata in typhoid fever, 19
 Ichthyol in atrophic rhinitis, 535
 in leprosy, 201
 Ichthyosis, 1063
 Ictere typhoide, 497
 Icterus, 507
 gravis, 497
 Idiocy, 1004
 Ignatia in chlorosis, 772
 in chorea, 967
 in chronic gastric catarrh, 375
 in convulsions, 955
 in gastric pain, 345
 in hyperchlorhydria, 382
 in hysteria, 941
 in insanity, 1002
 in migraine, 981
 in nervous diseases, 814
 in sciatica, 896
 Immunization by diphtheria antitoxin, 109
 Impetigo contagiosa, 1034
 Antimonium crudum in, 1035
 Mezereum in, 1036
 Sulphur in, 1036
 Thuja in, 1036
 Viola tricolor in, 1035
 Impotency, 766
 Iodides in angina pectoris, 671
 in arthritis deformans, 231
 Iodine in chorea, 968
 in chronic bronchitis, 558
 in diphtheria, 117
 in erysipelas, 143
 in exophthalmic goiter, 794
 in goiter, 789
 in heart diseases, 655
 in insanity, 1001
 in jaundice, 512
 in splenic diseases, 787
 in tubercular meningitis, 839
 in tuberculosis, 192
 Iodoform in jaundice, 512
 in tubercular meningitis, 838
 Iodo-glycerin in follicular pharyngitis, 307
 in hypertrophic rhinitis, 531
 Ipecacuanha in acute bronchitis, 554
 in acute catarrhal gastritis, 353
 in asthma, 580
 in black-water fever, 141
 in chronic bronchitis, 559
 in dengue, 43
 in dysentery, 134
 in hæmatemesis, 350
 in hæmoptysis, 568
 in malaria, 139
 in vomiting, 348
 in yellow fever, 41
 Irido-cyclitis, 1139
 Iris, 1138
 in migraine, 981
 in psoriasis, 1048
 in sciatica, 896
 Iritis, 1138
 Iron in chlorosis, 771
 Isolation in insanity, 989, 997
 in neurasthenia, 946
 of variola patients, 88
 Incontinence of urine, 763
 Increased vascular pressure, 674
 Indigestion in tuberculosis, 196
 Infancy and childhood feeding, 472
 Infants, diarrhœa in, 397
 Infarct of the spleen, 785
 Infections, fevers and the, 1
 Influenza, 60
 analgesics in, 61
 Bryonia in, 61
 Eupatorium perf. in, 61

- Influenza, gastro-intestinal disturbances in, 62
 Gelsemium in, 61
 general management of, 60
 prophylaxis, 60
 Rhus tox. in, 61
 Inhalations in acute catarrhal laryngitis, 543
 in chronic bronchitis, 557
 in bronchiectasia, 564
 in tuberculosis, 197
 Injection method of treating hæmorrhoids, 469
 Inoculations, prophylactic, in plague, 149
 Insomnia, 935
 in pericarditis, 610
 Insanity, Aconite in, 1000
 Alumina in, 1001
 Anacardium in, 1000
 Argentum nitr. in, 1000
 Arsenicum in, 1100
 Aurum met. in, 1000
 Baptisia in, 1003
 Belladonna in, 998
 Bryonia in, 1003
 Calcareo carb. in, 1001
 Calcareo phos. in, 1001
 Cimicifuga in, 1001
 Cannabis indica in, 1002
 Chamomilla in, 1003
 Cantharis in, 999
 Glonoin in, 1000
 Hyoscyamus in, 998
 Ignatia in, 1002
 Iodine in, 1001
 Kali brom. in, 998
 Lachesis in, 1003
 Lycopodium in, 1002
 Natrum carb. in, 1001
 mur. in, 1001
 Nitric acid in, 1001
 Nux vomica in, 1002
 Opium in, 998
 Palladium in, 1003
 Platinum in, 1003
 Phosphoric acid in, 1002
 Picric acid in, 1002
 Pulsatilla in, 1000
 Sepia in, 1001
 Silicea in, 1003
 Stannum in, 1002
 Staphisagria in, 1003
 Stramonium in, 999
 Sulphur in, 1000
 Thuja in, 1002
 Veratrum album in, 999
 prophylaxis of, 987
 treatment of, in general, 987
 Inspissated cerumen, 1144
 Internal ear, 1152
 hæmorrhoids, 469
 Interstitial keratitis, 1136
 Intertrigo, 1014
 Calcareo in, 1015
 Chamomilla in, 1015
 Graphites in, 1015
 Hepar in, 1015
 Lycopodium in, 1015
 Intervals for feeding, 487
 Intestinal antiseptics in dysentery, 132
 in typhoid fever, 24
 catarrh, chronic, 391
 Intestinal hæmorrhage, 427
 astringents in, 428
 Calcium chloride in, 428
 Ergot in, 429
 Gelatin in, 25
 Hydrastinine hydrochlorate, 429
 ice-bag, 428
 in typhoid fever, 24
 rest in, 427
 Sulphuric acid in, 428
 perforation in typhoid fever, 26
 neuroses, 432
 obstruction, 447
 tumors, 437
 ulcers, 439
 Intestines, diseases of the, 387
 Intoxications, 260
 Intubation, 119
 indications for, 124
 nasal, 125
 Intra-cranial hæmorrhage, 842
 Arnica in, 845
 Baryta carb. in, 846
 bleeding into veins in, 844
 Causticum in, 846
 diet in, 845
 Glonoin in, 845
 Opium in, 845
 posture in, 843
 purging in, 843
 Sulphur in, 846
 Intra-nasal neoplasms, 540
 JABORANDI in night-sweats, 196
 Jalap as a hydragogue cathartic, 722
 Jarvis snare in hypertrophic rhinitis, 532
 Jatropha curcas in cholera, 53
 Jaundice, 507
 Ammonium mur. in, 512
 Bryonia in, 512
 Carduus mar. in, 511
 Chamomilla in, 512
 Chelidonium in, 511
 Chionanthus in, 511
 Cinchona in, 512
 Digitalis in, 512
 Gelsemium in, 511
 Hydrastis in, 511
 Iodine in, 512
 Iodoform in, 512
 Juglans cinerea in, 511
 Kali bi. in, 511
 Leptandra in, 512
 Myrica cerifera in, 511
 Nux vomica in, 511
 Phosphorus in, 512
 Podophyllum in, 512
 Pruritus in, 509
 Pulsatilla in, 512
 Joint lesions of cerebro-spinal fever, 46
 pains from antitoxin, 113
 Joints, care of the, in rheumatic fever, 102
 in Malta fever, 202
 Juglans cinerea in jaundice, 511
 KALI bichrom. in acute bronchitis, 555
 in acute rhinitis, 522
 in asthma, 578
 in chronic bronchitis, 561
 in chronic catarrhal pharyngitis, 306

- Kali bichrom.** in chronic gastric catarrh, 376
 in chronic laryngitis, 546
 in chronic rhinitis, 533
 in diphtheria, 117
 in follicular pharyngitis, 308
 in gastric ulcer, 358
 in influenza, 62
 in jaundice, 511
 in psoriasis, 1048
 in syphilis, 170
 in uvulitis, 292
bromatum in acne, 1092
 in chronic bronchitis, 561
 in insanity, 998
carb. in chronic bronchitis, 561
 in heart diseases, 655
 in lichen, 1055
 in pericarditis, 612
chloratum in chronic nephritis, 691
chloricum in stomatitis, 285
hyd. in acute myelitis, 863
 in asthma, 576
 in atrophic rhinitis, 536
 in chronic bronchitis, 558
 in chronic rhinitis, 533
 in emphysema, 589
 in facial paralysis, 902
 in follicular pharyngitis, 308
 in intestinal nephritis, 696
 in pericarditis, 612
 in pleurisy, 598
 in syphilis, 170
 phos. in hyperchlorhydria, 382
 sulph. in acute rhinitis, 523
Kalmia in angina pectoris, 672
 in facial neuralgia, 906
 latifolia in rheumatic fever, 108
Keloid, 1076
Keratitis, interstitial, 1136
 neuropathic, 1136
Keratoconus, 1137
Keratosis follicularis, 1060
 nigricans, 1061
 palmaris et plantaris, 1059
 pilaris, 1060
Kidneys, cystic degeneration of the, 708
 diseases of the, 683
 hydatid disease of the, 708
 malignant tumors of the, 706
 tuberculosis of the, 758
Kola, 649
 in asthma, 572
LACHESIS, in acute catarrhal pharyngitis, 301
 in acute follicular tonsillitis, 303
 in carbunculus, 1037
 in delirium tremens, 266
 in diphtheria, 117
 in furunculosis, 1036
 in insanity, 1003
 in pemphigus, 1044
 in purpura, 784
 in scarlatina, 67
 in ulcerative endocarditis, 624
 in yellow fever, 41
Lactuca virosa in chronic bronchitis, 562
Lachnanthes in meningitis, 842
Lachrymal apparatus, 1124
 gland, fistula of the, 1124
 punctum, atresia of the, 1124
Lachrymal sac, blenorrhoea of the, 1125
Lactic acid in laryngeal tuberculosis, 549
Lacunar tonsillitis, 295
Lagophthalmos, 1123
 in facial paralysis, 901
Landry's paralysis, 867
Lang's gray oil, 162
Laryngeal crisis, 871
 syphilis, 550
 stenosis, 118
 tuberculosis, 547
 local treatment of, 548
 remedies for, 549
 silence treatment of, 547
 X-ray in, 1155
 tumors, 549
Laryngitis, acute catarrhal, 543
 Aconite in, 544
 Belladonna in, 544
 Ferrum phos. in, 544
 Guaiacum in, 544
 Hepar in, 545
 inhalations in, 543
 Phosphorus in, 544
 Wyethia in, 545
 Zinc chloride in, 544
 chronic catarrhal, 545
 Ammonium mur. in, 545
 Argentum nitricum in, 546
 Hepar in, 547
 Kali bichr. in, 546
 Phosphorus in, 546
 remedies for, 546
 œdematous, 546
Larynx, diseases of the, 543
Lathyrism, 276
Lathyrus in nervous diseases, 818
Latrodectus in angina pectoris, 672
Laurocerasus in cough, 195
 in endocarditis, 623
 in tuberculosis, 194
Lavage, 332
 in chronic gastric catarrh, 373
 in deficient gastric mobility, 384
 in hyperchlorhydria, 382
 in intestinal obstruction, 450
Laxatives in constipation, 411
Lead encephalopathy, 273
 nephritis, 273
 paralysis, 273
 poisoning, 271
 prophylaxis, 271
Leben, how to make, 662
Ledum in arthritis deformans, 230
 in gout, 237
 in lichen, 1055
 in rheumatic fever, 107
Legs, eczema of the, 1028
Lenhartz treatment of gastric ulcer, 359
Lentigo, 1065
Leprosy, 199
 contagiousness of, 199
 remedies for, 200
Leptandra in jaundice, 512
Leptothrix, 1095
Lethargy, hysterical, 944
Leucæmia, X-ray in, 1153
Leucocythæmia, 775
 Arsenic in, 775
 remedies in, 775

- Leucocythæmia**, splenectomy in, 776
 X-ray in, 775
Lenkoplakia, 288
Lichen, *Anacardium* in, 1055
 Baryta in, 1055
 Berberis in, 1055
 Kali carb. in, 1055
 Ledum in, 1055
 Manganum in, 1055
 Mercurius corrosivus in, 1055
 Sarsaparilla in, 1055
 acuminatus, 1050
 planus, 1052
 scrofulosis, 1054, 1073
Lightning pains of locomotor ataxia, 869
Lilium tigrinum in angina pectoris, 672
Lingua nigra, 291
Lingual tonsil, diseases of the, 399
Lips, eczema of the, 1026
Liquor calcis chlorinatæ in diphtheria, 117
Lithæmic headaches, 978
Lithium iod. in chronic bronchitis, 558
Liver, active congestion of the, 494
 acute yellow atrophy of the, 497
 amyloid, 505
 cirrhosis of the, 500
 diseases of the, 494
 malignant disease of the, 506
 passive congestion of the, 496.
Lobar pneumonia, 53
Lobelia in angina pectoris, 670
 in asthma, 580
 in pericarditis, 613
Locomotor ataxia, 867
 Alumina in, 874
 Argentum nitr. in, 874
 arthropathy of, 872
 Belladonna in, 875
 Berberis in, 875
 diet in, 873
 electricity in, 869
 Fränkel exercises in, 872
 gastric crises of, 871
 hydrotherapy in, 871
 laryngeal crises of, 871
 lightning pains of, 869
 massage in, 873
 optic nerve atrophy in, 872
 perforating ulcer of, 872
 Phosphorus in, 875
 Picric acid in, 875
 Potassium iod. in, 868, 875
 rest in, 868
 Secale in, 875
 urinary incontinence of, 871
 retention of, 871
 Zincum met. in, 874
 phos. in, 874
Löffler's solution, 114
Ludwig's angina, 305
Lumbago, 234
Lumbar puncture in cerebro-spinal fever, 45
Lung, abscess of the, 591
Lungs, active hyperæmia of, 582
 Aconite in, 583
 Antimonium tart. in, 583
 Belladonna in, 583
 Ferrum phos. in, 583
 Phosphorus in, 583
 Veratrum viride in, 583
Lungs, diseases of the, 551
 gangrene of the, 594
 hypostatic congestion of, 583
 mechanical hyperæmia of, 583
 passive hyperæmia of, 583
 tumors of the, 595
Lupus erythematosus, 1074
 verrucosus, 1073
 vulgaris, 1071
Lycopodium in flatulence, 346
 in hyperchlorhydria, 382
 in infantile constipation, 423
 in infantile diarrhœa, 404
 in insanity, 1002
 in intertrigo, 1015
 in psoriasis, 1048
 in renal colic, 698
 in sciatica, 895
Lycopus in exophthalmic goiter, 793
 in hæmoptysis, 569
Lymph glands in scarlatina, 71
Lymphadenitis, 742
Lymphangitis, 257, 742
Lymphangectodes, 1080
MAGNESIA, milk of, in infantile constipation, 422
Magnesium phos. in facial neuralgia, 906
 in hyperchlorhydria, 382
Malarial fever, 135
 Alstonia scholaris, 140
 Aranea diadema in, 140
 Canchalagua in, 140
 Capsicum in, 139
 Cedron in, 140
 Cinchona in, 139
 Cornus florida in, 140
 Eucalyptus in, 140
 Eupatorium in, 139
 Gelsemium in, 140
 Ipecacuanha in, 139
 Menyanthes in, 140
 mosquitoes, the cause of, 135
 Nux vomica in, 140
 pernicious, 137
 prophylaxis of, 135
 Quinine in, 136
 headaches, 978
Malta fever, 201
Malignant disease of the liver, etc., 506
 pustule, 153
 tumors of rectum, 466
Malnutrition in insanity, 991
Malta fever, bathing in, 201
 diet for, 202
 remedies in, 202
Mania, acute, 1004
Manganum in lichen, 1055
 in prurigo, 1020
 in psoriasis, 1048
Marriage and heart disease, 631
Massage, 809
 in acute poliomyelitis, 865
 in cholelithiasis, 515
 in constipation, 414
 in intestinal obstruction, 450
 in locomotor ataxia, 873
 in neurasthenia, 948
 in neuritis, 886
 in paralysis agitans, 962

- Massage** in sciatica, 891
 in stomach diseases, 339
Mastoiditis, 1151
Masturbation, prevention of, 993
Measles, 75
 Aconite in, 77
 Belladonna in, 77
 Bryonia in, 77
 Cuprum in, 78
 Gelsemium in, 77
 general management of, 75
 Kali bichromicum in, 77
 mouth in, 76
 Pulsatilla in, 77
 nervous symptoms in, 78
 prophylaxis, 75
 skin, 78
Mechanical restraint in insane patients, 994
Medicated baths, 1171
Medina worm, 258
Mediterranean fever, 201
Melancholia, 1005
 hysterical, 943
Melilotus, in headache, 976
Membranous conjunctivitis, 1131
 enteritis, 423
 stomatitis, 284
Meniere's disease, 971
Meningitis, 836
 acute internal spinal, 860
 Aconite in, 861
 Apis in, 861
 Belladonna in, 861
 Bryonia in, 861
 Ferrum phos. in, 861
 Rhus tox. in, 861
 in pneumonia, 58
 alcoholic, serous, 841
 simple and suppurative, 840
 Aconite in, 841
 Arnica in, 841
 Belladonna in, 841
 Bryonia in, 842
 Lachnanthes in, 842
 Mercurius in, 842
 Potassium iodide in, 842
 surgical treatment of, 841
 Veratrum viride in, 842
 tubercular, 837
Menthol in acute rhinitis, 523
Mephitis in whooping-cough, 100
Mercurial inunctions, 162
 poisoning, chronic, 273
 Potassium iodide in, 274
 Potassium chlorate in, 274
 prophylaxis, 274
 remedies for, 274
 stomatitis, 274
 remedies for, 283
Mercurius biniod. in diphtheria, 116
 in acute follicular tonsillitis, 303
 in follicular tonsillitis, 295
 in typhus fever, 36
 cor. in atrophic rhinitis, 536
 in chronic nephritis, 690
 in diphtheria, 116
 in dysentery, 132
 in gastric ulcer, 358
 in lichen, 1055
 in pleurisy, 598
Mercurius cyanatus in diphtheria, 116
 dulcis in dysentery, 132
 protoid. in diphtheria, 116
 in syphilis, 171
 sol. in dengue, 43
 vivid in acute bronchitis, 555
 in acute myelitis, 863
 in cirrhosis of the liver, 504
 in eczema, 1030
 in meningitis, 842
 in psoriasis, 1048
 in seborrhœa, 1086
 in stomatitis, 286
 in syphilis, 170
 in variola, 90
 in yellow fever, 41
Mercury in syphilis, 161
 salicylate in syphilis, 163
Mesotan in rheumatic fever, 104
Metatarsalgia, 898
Meteorism in typhoid fever, 28
Methylene blue in gastric cancer, 365
 in lightning pains, 870
 in malaria, 138
 in pyelitis, 703
Menyanthes in malaria, 140
Mezereum in eczema, 1031
 in facial neuralgia, 906
 in impetigo, 1036
 in neuralgia, 890
 in pityriasis, 1050
 in seborrhœa, 1086
 in syphilis, 168, 171
Migraine, 978
 Belladonna in, 981
 Calcarea in, 981
 Cannabis indica in, 981
 diet in, 979
 electricity in, 982
 Glonoin in, 982
 Iris vers. in, 981
 Ignatia in, 981
 Sanguinaria in, 981
 Sepia in, 981
 Stannum in, 981
 Sulphur in, 981
 treatment of the paroxysm, 980
Miliaria, 1095
Milium, 1086, 1121
Milk diet in chronic nephritis, 689
 in fevers, 5
 in typhoid fever, 12
Millefolium in hæmoptysis, 569
Mind, diseases of the, 985
Mineral springs in cholelithiasis, 516
Modification of cow's milk, 480
Modifying milk, method of, 482
Molluscum contagiosum, 1070
Monolithrix, 1096
Moral insanity, 1004
Morphia in angina pectoris, 670
 in constipation, 273
 in convulsions, 953
 in heart diseases, 648
 in influenza, 61
 in pain, 831
 in renal colic, 697
 in vomiting, 52
 habit, 266
Morton's disease, 898

- Moschus** in asthma, 582
 in heart diseases, 655
 in hiccough, 911
 in hysteria, 941
Mosquitoes and malaria, 135
 and yellow fever, 38
Mother's mark, 1078
Motility of eyes, disturbances of, 1141
Mouth, care of, in scurvy, 243
 infants, hygiene of the, 281
 foot and, disease of, 285
 in measles, 76, 78
 in variola, 91
 syphilis of the, 284
 tuberculosis of the, 284
 diseases of, 281
Mucous colic, 423
 colitis, 423
 appendicostomy in, 427
 diet in, 424
 enteroclysis in, 426
 remedies in, 427
Multiple fibroma, 1078
 neuritis, 883
Mumps, 95
 Aconite in, 96
 cerebral symptoms of, 97
 local treatment of, 96
 management of the patient, 96
 prophylaxis of, 95
Muriatic acid in scurvy, 244
 in stomatitis, 286
 in typhus fever, 36
Muscular atrophies, 878
 dystrophies, 880
Myalgia, 234
Mycosis fungoides, 1081
 tonsillaris, 297
Mycotic stomatitis, 282
Myelitis, acute, 861
 bed-sores in, 861
 Cuprum ars. in, 863
 Dulcamara in, 863
 Kali hyd. in, 863
 Mercurius in, 363
 rest in, 863
 surgical treatment of, 862
 chronic, 863
 remedies for, 864
Mygale in chorea, 968
Myocarditis, diet in, 661
 drink restriction in, 659
 exercise in, 659
 medicines for, 668
 Nauheim treatment, 663
 Oertel exercises in, 661
 prophylaxis of, 659
 rest in, 660
 Schott exercises in, 666
 chronic, 658
 diet, 661
 drink restrictions in, 659
 Nauheim baths, 663
 rest in, 659
 Schott exercises, 666
 remedies in, 668
Myomata of the skin, 1078
Myotonia congenita, 982
Myrica cerifera, in jaundice, 511
Myxoedema, 796
NÆVUS vasculosus, 1078
Nagana disease, 255
Nails, diseases of the, 1103
 eczema of the, 1028
 favus of the, 1107
Naja in ulcerative endocarditis, 624
Naphthalinum in chorea, 968
 in whooping-cough, 99
Nasal catarrh, chronic, 526
 cavities, cleansing of the, 534
 feeding, 991
 septum, affections of the, 541
 syphilis, 540
 tuberculosis, 541
Natrum arsenicosum in pityriasis, 1050
 carb. in insanity, 1001
 in pompholyx, 1042
 mur. in herpes facialis, 1040
 in insanity, 1001
 in keratosis pilaris, 1060
 in splenic diseases, 788
 sulph. in onychia, 1104
 in pemphigus, 1044
 in tuberculosis, 194
Nauheim baths in myocarditis, 663
 treatment, 663
Neapolitan fever, 201
Negative phase, 1182
Neoplasma of the skin, 1070
Neoplasms, intranasal, 540
Nephritis, acute, 682
 Aconite in, 685
 Apocynum in, 685
 Arsenicum in, 685
 Cantharis in, 685
 diet in, 682
 Glonoin in, 686
 hydrotherapy in, 684
 rest in, 682
 Rhus tox. in, 686
 salt restriction in, 683
 Terebinthina in, 685
 Veratrum viride in, 685
 water drinking in, 683
 chronic diffuse, 687
 Arsenicum alb. in, 691
 Aurum mur. in, 691
 Cantharis in, 690
 diet in, 685
 Kali chlorat. in, 691
 Merc. cor. in, 690
 milk diet in, 689
 Phosphoric acid in, 601
 Potassium iod. in, 691
 remedies for, 691
 Strontium lact. in, 691
 surgical treatment of, 691
 interstitial 693
 Aconite in, 696
 Aurum in, 696
 diet in, 694
 Glonoin in, 696
 Kali hyd. in, 696
 Plumbum in, 696
 scarlatinal, 67, 72
Nephrolithiasis, 697
 Arnica in, 700
 Arsenicum in, 700
 Belladonna in, 700
 Benzoic acid in, 700

- Nephrolithiasis, Berberis in, 700
 Calcareo carb. in, 700
 Nux vomica in, 700
 Opium in, 700
 prophylaxis, 698
 Sarsaparilla in, 700
 surgical treatment of, 700
 Tabacum in, 700
 Nerve anastomosis, in acute poliomyelitis, 867
 injuries, surgical treatment of, 887
 Nerves, diseases of the peripheral, 883
 Nervous symptoms, in measles, 78
 system, general remarks on the treatment
 of diseases of the, 800
 in variola, 91
 Neuralgia, 888
 Actea rac. in, 889
 Arsenicum in, 890
 Belladonna in, 889
 Cedron in, 890
 electricity in, 889
 heat in, 889
 Mezereum in, 890
 surgical treatment of, 889
 plantar, 900
 X-ray in, 1161
 Neurasthenia, 944
 Anacardium in, 952
 diet in, 949
 Epiphagus in, 952
 electricity in, 948
 Erythroxylon coca in, 952
 Hydrotherapy in, 950
 isolation in, 946
 massage in, 948
 Phosphoric acid in, 959
 Phosphorus in, 951
 Picric acid in, 951
 post-influenzal, 62
 rest in, 945
 sexual habits in, 950
 sleeplessness in, 950
 Strychnia in, 950
 suggestion in, 949
 Zincum in, 951
 Neurasthenic vertigo, 971
 Neuritis, 883
 Aconite in, 886
 Analgesics in, 884
 Arnica in, 886
 Arsenicum in, 887
 Aspirin in, 886
 Belladonna in, 886
 diet in, 884
 electricity in, 885
 Ferrum phos. in, 986
 Hypericum in, 886
 massage in, 886
 Nux vomica in, 987
 pain in, 884
 Phosphorus in, 887
 post-influenzal, 62
 Potassium iodide in, 886
 rest in, 883
 Rhus tox. in, 886
 Neuromata, 887
 Neuropathic keratitis, 1136
 Neuroses, intestinal, 432
 of the skin, 1067
 of uvula, 294
 Night-sweats in tuberculosis, 195
 remedies for, 195
 terrors, 972
 Nitre paper, in asthma, 572
 Sweet spirits of, in typhoid fever, 22
 Nitric acid in acne, 1092
 in insanity, 1001
 in scurvy, 244
 in stomatitis, 286
 in syphilis, 167, 171
 Noma, 284
 Nose, angio-neurotic oedema of, 539
 -bleed, 524
 diseases of the, 520
 foreign bodies in the, 539
 Nuclein in phosphaturia, 718
 Nutmeg liver, 496
 Nux vomica, in acne, 1092
 in acute catarrhal gastritis, 353
 in active congestion of liver, 496
 in acute enteritis, 390
 in angina pectoris, 672
 in asthma, 579
 in cerebral hyperæmia, 835
 in chronic catarrhal pharyngitis, 306
 in chronic gastric catarrh, 375
 in chorea, 908
 in constipation, 419
 in dengue, 43
 in epilepsy, 923
 in flatulence, 346
 in follicular pharyngitis, 308
 in hæmaturia, 714
 in headache, 976
 in heart diseases, 657
 in hyperchlorhydria, 382
 in infantile constipation, 423
 diarrhœa, 404
 in insanity, 1002
 in jaundice, 511
 in lead poisoning, 273
 in malarial fevers, 140
 in nephrolithiasis, 700
 in neuritis, 887
 in sciatica, 895
 in vomiting, 348
 in yellow fever, 41
 moschata in splenic diseases, 788
 OAT CURE in diabetes, 218
 -meal water, 492
 Obesity, 203
 Ander's system in, 211
 Banting system, 205
 dry diet in, 209
 Ebstein treatment of, 206
 habits in, 203
 Hirschfeld's diet in, 211
 Oertel system in, 206
 Salisbury diet in, 210
 Schleicher's diet in, 210
 Schweiningher system in, 209
 von Noorden's diet in, 211
 Weir Mitchell's method in, 206
 Obstructive rhinitis, 529
 Oesophagus, carcinoma of the, 313
 diseases of the, 311
 Oesophageal diverticulum, 314
 hæmorrhage, 311
 paralysis, 343

- Esophageal perforation, 314
 stenosis, 312
 Esophagismus, 312
 Esophagitis, 311
 general treatment, 311
 remedies for, 311
 Veratrum viride in, 311
 Occupation of the insane, 997
 neuroses, 960
 Edema, neonatorum, 1063
 of the conjunctiva, 1133
 of the lids, 1121
 of lungs, remedies for, 686
 Edematous laryngitis, 546
 Enanthe in epilepsy, 923
 Oertel exercises in myocarditis, 661
 system in obesity, 206
 Oligozoospermia, 769
 Olive oil in cholelithiasis, 516
 Onychauxis, 1104
 Onychia, 1103
 Fluoric acid in, 1103
 Graphites in, 1103
 Hepar in, 1103
 Natrum sulph. in, 1104
 Sarsaparilla in, 1104
 Sulphur in, 1104
 Onychogryphosis, 1104
 Onychomycosis, 1104
 Opacities, corneal, 1136
 Open air for the insane, 995
 treatment of pulmonary tubercu-
 losis, 182
 Operation in cholelithiasis, 519
 Ophthalmia neonatorum, 1127
 sympathetic, 1139
 Opium in constipation, 419
 in convulsions, 955
 in cough, 195
 in headache, 976
 in insanity, 998
 in intestinal obstruction, 449
 in intra-cranial hæmorrhage, 845
 in lead poisoning, 273
 in nephrolithiasis, 700
 in nervous diseases, 819
 in typhoid fever, 25
 in typhus fever, 35
 Opothecy in diabetes, 224
 Opsonic index, definition of, 1181
 method of treatment, 1180
 Opsonins, definition of, 1180
 Optic nerve atrophy in locomotor ataxia, 872
 Orchitis in mumps, 97
 Orexine in hyperchlorhydria, 383
 in anorexia, 349
 Oriental sore, 1082
 Orthopædic treatment of acute poliomyelitis,
 866
 Otitis externa circumscripta, 1144
 diffusa, 1143
 media in measles, 79
 acute, 1148
 chronic suppurative, 1150
 in scarlatina, 70
 Oxalic acid poisoning, 355
 Oxaluria, 716
 Ox-gall, 324
 in constipation, 422
 Oxyuris vermicularis, 250
 Ozæna, 533
 PACHYMEMINGITIS, cerebral, 837
 hæmorrhagica, 837
 Paget's disease of the nipples, 1081
 Pain, 830
 arterio-sclerotic, 345
 in active congestion of liver, 495
 in acute catarrhal enteritis, 388
 in angina pectoris, 670
 in cirrhosis of the liver, 502
 in dysentery, 131
 gastric, 343
 in neuritis, 834
 in pericarditis, 609
 in pleurisy, 595
 Pains, hysterical, 935
 in the feet, 897
 Painful heel, 897
 great toe, 898
 Palate, paralysis of soft, 294
 Palladium in insanity, 1003
 Palms, eczema of the, 1027
 Palpitation of the heart, 673
 Pancreatin, 323
 Papilloma of the larynx, X-ray in, 1159
 Paracentesis pericardii, 613
 thoracis, 599
 Paralysis, diphtheritic, 118
 Paranoia, 1005
 Paraplegia, ataxic, 875
 spastic, 876
 Parasitic affections, 1105
 Paresis, 1006
 Palpitations, hysterical, 944
 Panophthalmitis, 1139
 Paraldehyd, in delirium tremens, 265
 Paralysis, hysterical, 935
 agitans, 961
 Paralytic bladder, 761
 Parathyroid feeding in tetany, 956
 Parotitis, epidemic, 95
 Paroxysms, asthmatic, 571
 Passiflora incarnata in tetanus, 157
 Passive congestion treatment of arthritis de-
 formans, 229
 Pasteur's inoculation, 151
 Pasteurizing food, 487
 Pediculosis, 1114
 capitis, 1114
 corporis seu vestimenti, 1116
 pubis, 1116
 Pelleterine in tape-worm, 253
 Pemphigus, 1042
 Arsenicum in, 1043
 Bufo rana in, 1044
 Caltha in, 1044
 Cantharis in, 1043
 Copaiba in, 1044
 Natrum sulph. in, 1044
 Lachesis in, 1044
 Phosphorus in, 1044
 Ranunculus bulb. in, 1044
 Rhus tox. in, 1043
 Secale in, 1044
 Thuja in, 1044
 Penthorum sedoides in chronic rhinitis, 533
 in chronic catarrhal pharyngitis, 306
 Penzoldt's diet lists, 329
 Pepsin, 323

- Pericarditis, 609
 Aconite in, 611
 Actea rac. in, 613
 Anacardium in, 613
 Asclepias in, 612
 Apis mel. in, 612
 Arsenicum in, 612
 Bryonia in, 612
 Cactus grand. in, 613
 Cannabis ind. in, 612
 Cantharis in, 612
 chronic, 615
 Colchicine in, 611
 Colchicum in, 612
 cold applications in, 610
 cough of, 611
 diet in, 610
 Digitalis in, 611
 insomnia of, 610
 Kali carb. in, 612
 hyd. in, 612
 Lobelia in, 613
 pain in, 609
 Paracentesis in, 610
 rest in, 609
 Spigelia in, 612
 Veratrum viride in, 613
 Perforating ulcer, 872
 Perihepatitis, Aconite in, 499
 Asclepias in, 499
 Baptisia in, 499
 Belladonna in, 499
 Bryonia in, 499
 Sulphur in, 499
 acute, 498
 suppurative, 499
 Perleche, 284
 Perinephritis, 705
 Perisplenitis, 784
 Perirenal abscess, 705
 Peripheral nerves, diseases of the, 883
 Pernicious anæmia, 773
 Personality of physician in hysteria, 932
 Pertussis, 97
 Peruvian warts, 1082
 Petroleum in atrophic rhinitis, 536
 in psoriasis, 1048
 in tuberculosis, 194
 Pharynx, diseases of the, 292
 Pharyngitis, acute catarrhal, 300
 atrophic, 308
 chronic follicular, 307
 granular, 307
 hæmorrhagic, 304
 herpetic, 304
 rheumatic, 309
 sicca, 308
 septic, 303
 traumatic, 301
 Phellandrium aquaticum in tuberculosis, 194
 Phenacetin in influenza, 61
 Phlebitis, 679
 local treatment, 680
 remedies for, 680
 Phlegmon of the eyelids, 1119
 Phlegmonous gastritis, 355
 Phlyctenular ophthalmia, 1130
 Phosphaturia, 717
 Arsenicum in, 718
 Glycero-phosphates in, 718
 Phosphaturia, Nuclein in, 718
 Phosphoric acid in, 718
 Phosphoric acid in acute catarrhal enteritis, 390
 in chronic nephritis, 691
 in diabetes, 222
 in insanity, 1002
 in neurasthenia, 951
 in night sweats, 195
 in phosphaturia, 718
 in pompholyx, 1042
 in rachitis, 248
 in typhoid fever, 21
 in typhus fever, 35
 Phosphorus in active pulmonary hyperæmia, 583
 in acute bronchitis, 544
 in acute laryngitis, 544
 in blackwater fever, 141
 in chronic bronchitis, 562
 in chronic gastric catarrh, 375
 in chronic laryngitis, 546
 in cirrhosis of the liver, 504
 in diabetes, 223
 in emphysema, 589
 in gastric cancer, 366
 in gastric ulcer, 358
 in hæmaturia, 514
 in heart diseases, 657
 in jaundice, 512
 in locomotor ataxia, 875
 in nervous diseases, 825
 in neurasthenia, 951
 in neuritis, 887
 in pemphigus, 1044
 in pleurisy, 598
 in pneumonic fever, 58
 in poisoning, 355
 in purpura, 783
 in rachitis, 247
 in tuberculosis, 192
 in typhus fever, 35
 in variola, 90
 Phthiriasis, 1122
 Physostigma in nervous diseases, 826
 Phytolacca decandra in diphtheria, 117
 in acute catarrhal pharyngitis, 301
 in follicular tonsillitis, 295
 in goiter, 790
 in stomatitis, 283
 Picric acid in diabetes, 223
 in eczema, 1033
 in insanity, 1002
 in locomotor ataxia, 875
 in neurasthenia, 951
 Pigmentations, miscellaneous, 1066
 Piles, 467
 Pilocarpine as a diaphoretic, 722
 in lightning pains, 870
 in pruritus, 1069
 in syphilis, 168
 Pinguecula, 1133
 Pityriasis, Arsenicum album. in, 1050
 Belladonna in, 1050
 Mezereum in, 1050
 Natrum sulph. in, 1050
 rosæ, 1049
 rubra, 1048
 Plague, 148
 prophylactic inoculations, 149

- Plague, prophylaxis of, 148
 treatment of patient, 150
 Plantar neuralgia, 900
 Plastic bronchitis, 562
 Platinum in chlorosis, 772
 in facial neuralgia, 906
 in insanity, 1003
 in lead poisoning, 273
 Pleura, diseases of the, 551
 Pleurisy, 595
 Aconite in, 597
 Apis in, 597
 Arsenicum in, 597
 Asclepias tuberosa in, 598
 Bryonia in, 597
 Cantharis in, 597
 Colchicum in, 598
 Kali hyd. in, 598
 Mercurius corrosivus in, 598
 paracentesis in, 599
 Phosphorus in, 598
 Rhus tox. in, 598
 Scilla in, 598
 Sodium salicylate in, 598
 sulphur in, 598
 Pleurodynia, 234
 Plugging the nares for epistaxis, 525
 Plumbism, 271
 Plumbum in acute poliomyelitis, 867
 in bulbar palsy, 859
 in diabetes, 223
 in interstitial nephritis, 696
 in progressive muscular atrophy, 879
 Pneumonia, hypostatic, 583
 Pneumonic fever, 53
 Antimonium iod. in, 58
 Apomorphia in, 58
 Bryonia in, 57
 cardiac failure in, 59
 delayed resolution, 58
 diet in, 56
 Ferrum phos. in, 57
 general management of, 54
 Phosphorus in, 58
 typhoid type of, 59
 Veratrum viride in, 57
 Pneumokoniosis, 593
 Pneumothorax, 606
 Podophyllum in acute catarrhal enteritis, 390
 in jaundice, 512
 Polymnia uvedalis in splenic diseases, 788
 Poliomyelitis, anterior acute, 864
 Aconite in, 865
 Belladonna in, 865
 Causticum in, 867
 clothing in, 866
 counter-irritation, 864
 electricity in, 865
 Gelsemium in, 865
 Graphites in, 867
 hydrotherapy in, 865
 nerve anastomosis in, 867
 massage in, 865
 orthopædic treatment of, 866
 Plumbum in, 367
 Thiosinamine in, 867
 chronic, 879
 Pomegranate in tape-worm, 235
 Pompholyx, 1041
 Hepar in, 1042
 Pompholyx, Natrum carb. in, 1042
 Phosphoric acid in, 1042
 Ranunculus bulbosus in, 1042
 Pork tape-worm, 251
 Porokeratosis, 1061
 Port-wine marks, 1079
 Porto Rican anæmia, 258
 Positive phase, 1182
 Post-diphtheritic paralysis, 113
 nasal adenoids, 299
 Posture in intracranial hæmorrhage, 843
 Posterior urethritis, acute, 730
 chronic, 738
 Potassium bitartrate as a diuretic, 721
 bromide in hysteria, 943
 chlorate in mercurial stomatitis, 271
 iodide in aneurysm, 677
 in cerebro-spinal fever, 48
 in chronic nephritis, 691
 in locomotor ataxia, 868, 875
 in meningitis, 842
 in neuritis, 886
 in pneumococcic meningitis, 58
 in syphilis, 164
 iodo-hydrargyrate in scarlatina, 65
 Potato cure in diabetes, 218
 Powder blower, stomach, 336
 Pregnancy, chorea of, 969
 Prickly heat, 1095
 Proctitis, 461
 Progressive muscular atrophy, 879
 electricity in, 879
 Plumbum in, 879
 remedies for, 880
 Prolapse, rectal, 459
 Prolonged warm bath, 806
 Prophylaxis of dysentery, 130
 of typhoid fever, 8
 Proprietary foods, 493
 Prostate, malignant disease of the, 761
 tuberculosis of the, 759
 Prostatic abscess, 743
 hypertrophy, 759
 Prostatitis, acute gonorrhœal, 742
 chronic gonorrhœal, 744
 Prostatorrhœa, 765
 Prurigo, 1019
 Alumina in, 1020
 Arsenicum iod. in, 1020
 Manganum in, 1020
 Rumex in, 1020
 Sulphur in, 1020
 Pruritus, 1067
 ani, 1069
 in diabetes, 225
 in jaundice, 509
 scroti, 1069
 hiemalis, 1069
 vulvæ, 1070
 Pseudo-hypertrophic paralyses, 880
 -meningitis, 944
 -peritonitis, 944
 Psoriasis, 1045
 Arnica in, 1048
 Arsenicum in, 1047
 Asterias rubens in, 1048
 Calcarea fluorica in, 1048
 Carbolic acid in, 1048
 Chrysarobin in, 1048
 Hydrocotyle in, 1048

- Psoriasis, *Iris versicolor* in, 1048
 Kali bichromicum in, 1048
 Lycopodium in, 1048
 Manganum in, 1048
 Mercurius in, 1048
 Petroleum in, 1048
 Pyrogallic acid in, 1046
 Sepia in, 1048
 Sulphur in, 1048
 Tar in, 1046
 Thuja in, 1046, 1048
 Psychotherapy in insanity, 996
Ptelea trifoliata in cirrhosis of the liver, 504
Pterocarpus indicus in sprue, 289
Pterygium, 1133
 Ptomaine poisoning, 275
 Ptoxis, 1122
 Ptyalism, 289
 Pulmonary tuberculosis, 171
Pulsatilla in acute rhinitis, 522
 in arthritis deformans, 230
 in chlorosis, 777
 in chorea, 968
 in chronic gastric catarrh, 375
 in chronic rhinitis, 533
 in headaches, 976
 in hysteria, 943
 in insanity, 1000
 in jaundice, 512
 in measles, 77
 in orchitis, 97
 in rheumatic fever, 108
 in sciatica, 894
 Purgatives in intestinal obstruction, 448
 in constipation, 411
 Purgative enema in constipation, 415
 Purgation in dysentery, 132
 Purging in intra-cranial hæmorrhage, 843
Purpura, 783
 Aconite in, 784
 Arnica in, 783
 Arsenic in, 783
 Belladonna in, 784
 Bovista in, 784
 Cinchona in, 783
 Hamamelis in, 783
 Lachesis in, 784
 Phosphorus in, 783
 Sulphuric acid in, 783
 in scarlatina, 72
 Purulent conjunctivitis, 1127
Pyæmia, 145
Pyelitis, 750
 hexamethylendiamin in, 703
 management of, 702
 remedies for, 703
 Urotropin in, 703
Pyelonephritis, 702
Pyoktanin in chronic catarrhal pharyngitis, 306
Pyonephrosis, 703
Pyopericardium, 617
Pyopneumothorax, 606
Pyrogen in septicæmia, 148
 Pyrogallic acid in psoriasis, 1046
Pythogenic fever, 8
Pyuria, 716

 QUANTITY of food required, 331
Quebracho in emphysema, 569,

- Quinine bisulphate in asthma, 581
 sulphate in malarial fever, 136
 in ulcerative endocarditis, 624
 in yellow fever, 41
 in scarlatina, 66
 Quinsy, 296

 RABIES, 151
 Belladonna in, 153
 Cantharis in, 153
 prophylaxis, 151
Rachitis, 245
 Calcareæ ostrearum in, 248
 phos. in, 248
 deformities of, 247
 diet in, 245
 Ferrum phos. in, 24
 Phosphoric acid in, 248
 Phosphorus in, 247
 remedies in, 248
 Silicea in, 248
 syphilis and, 246
Ranula, 289
Ranunculus bulb. in eczema, 1031
 bulbosus in herpes zoster, 1038
 in nervous diseases, 822
 in pemphigus, 1044
 in pompholyx, 1042
 in splenic diseases, 788
 Rapid eating, 318
 Raynaud's disease, 983
 Revaccination, 85
 Recreation for epileptics, 915
 Rectal abscess, 452
 gonorrhœa, 754
 neoplasms, 465
 prolapse, 459
 Rectum, carcinoma of the, 438
 diseases of the, 452
 fibrous stricture of, 463
 foreign bodies in the, 453
 malignant tumors of, 466
 tubercular ulceration of, 463
 Red-light in erysipelas, 143
 Reflex origin of epilepsy, 915
 Relapsing fever, 36
 Aconite in, 37
 Baptisia in, 37
 diet in, 38
 Eupatorium in, 37
 hydrotherapy in, 37
 prophylaxis of, 36
 Rhus tox. in, 37
 stimulation in, 38
 Renal colic, 697
 Argentum nitricum in, 698
 Atropia in, 697
 Berberis in, 698
 Cantharis in, 698
 Lycopodium in, 698
 remedies in, 697
 Rest after eating, 319
 and exercise in insanity, 995
 in acute myelitis, 861
 in acute nephritis, 682
 in chlorosis, 770
 in chronic gastric catarrh, 372
 in chronic myocarditis, 659
 in constipation, 408
 in endocarditis, 619

- Rest in fever, 1**
 in hæmoptysis, 567
 in hyperchlorhydria, 380
 in intestinal hæmorrhage, 427
 in locomotor ataxia, 868
 in myocarditis, 660
 in nervous diseases, 813
 in neurasthenia, 945
 in neuritis, 883
 in pericarditis, 609
 in sciatica, 890
 in tuberculosis, 186
 in typhoid fever, 10
 in ulcer of the stomach, 356
Restlessness, hysterical, 943
Retention of urine, 752
 hysterical, 934
Retropharyngeal abscess, 304
Rhatania in acute catarrhal pharyngitis, 301
Rheumatic fever, 102
 Aconite in, 106
 analgesics in, 106
 Apis mellifica in, 107
 Belladonna in, 108
 Bryonia in, 107
 Carbolic acid in, 105
 Cimicifuga rac. in, 107
 Colchicum in, 105
 diet in, 100
 Ferrum phos. in, 107
 general management of, 102
 hyperpyrexia in, 108
 Kalmia in, 108
 Ledum in, 107
 prophylaxis of, 102
 Pulsatilla in, 108
 Rhus radicans in, 108
 Rhus tox. in, 107
 salicylates in, 103
 specific treatment of, 106
 headaches, 978
 pharyngitis, 309
 sore throat, 309
Rheumatism, acute inflammatory, 102
 chronic, 131
 general management, 232
 hydrotherapy in, 233
 gonorrhœal, 754
Rhinoscleroma, 1076
Rhinitis in scarlatina, 69
 acute, 519
 Aconite in, 522
 Allium cepa in, 522
 Belladonna in, 522
 Camphor in, 522
 Euphrasia in, 523
 Gelsemium in, 522
 Hepar in, 523
 Hydrastis in, 523
 Kali bi. in, 522
 sulph. in, 523
 Menthol in, 523
 Pulsatilla in, 522
 Sambucus in, 523
 Sanguinaria in, 523
 atrophic, 533
 Alumina in, 536
 Argentum nitr. in, 536
 Arsenicum iod. in, 536
 Aurum mur. in, 536
Rhinitis, atrophic, cleansing the nasal cavities in, 534
 Dobell's solution in, 534
 Formalin in, 535
 Ichthyol in, 535
 Kali hyd. in, 536
 Mercurius cor. in., 536
 Petroleum in, 536
 Sepia in, 536
 Silicea in, 536
 chronic catarrhal, 526
 Arsenicum iod. in, 533
 clothing in, 528
 exercise in, 528
 Hepar in, 533
 Hydrastis in, 533
 hydrotherapy in, 527
 Kali bi. in, 533
 hyd. in, 533
 local treatment, 528
 medication, 527
 Penthorum sedoides in, 533
 Pulsatilla in, 533
 hypertrophic, 529
 Chromic acid in, 531
 galvano-cautery in, 532
 Iodo-glycerin in, 532
 Jarvis snare in, 532
 remedies for, 533
 simple chronic catarrhal, 527
Rhubarb in diarrhœa, 196
Rhus aromatica in hæmaturia, 715
 radicans in rheumatic fever, 108
 tox., acute, in myelitis, 863
 nephritis, 686
 in delirium, 29
 in dengue, 43
 in dysentery, 133
 in eczema, 1030
 in endocarditis, 622
 in enteralgia, 436
 in erysipelas, 144
 in erythema, 1014
 in erythema multiforme, 1016
 in facial paralysis, 902
 in fever, .
 in herpes progenitalis, 1041
 noster, 1038
 in influenza, 61
 in nervous diseases, 826
 in neuritis, 886
 in pemphigus, 1043
 in pleurisy, 598
 in relapsing fever, 37
 in rheumatic fever, 107
 in scarlatina, 65
 in sciatica, 893
 in spinal meningitis, 861
 in typhoid fever, 21
 in typhus fever, 36
 in uveitis, 252
 in variola, 89
 in yellow fever, 41
Rhythmical chorea, 944
Rickets, 245
Riga's disease, 284
Rigors, 280
Robinia in hyperchlorhydria, 382
Rock-fever, 201
Rodent ulcer, 1081

- Romberg's neuralgia, 433
 Rubella, 79
 Rumex crispus in acute bronchitis, 553
 in chronic bronchitis, 562
 in prurigo, 1020
- SABINA in arthritis deformans, 230
 Saccharum lactis as a diuretic, 721
 Sajodin in asthma, 578
 Salicin in rheumatic fever, 103
 Salicylates in diabetes, 224
 in rheumatic fever, 103
 Salicylic acid in erythema multiforme, 1016
 Salisbury method in obesity, 210
 Salivation, 289
 Salol in rheumatic fever, 103
 Salt restriction in acute nephritis, 683
 in epilepsy, 922
 in myocarditis, 675
 Sambucus in acute rhinitis, 523
 in asthma, 582
 in night sweats, 196
 Sanguinaria in acute rhinitis, 523
 in chronic bronchitis, 562
 in migraine 981
 nitrate in chronic catarrhal pharyngitis, 306
 in follicular pharyngitis, 307
 Santonine in ascariis lumbricoide, 249
 in lightning pains, 870
 Sarcoma of rectum, 466
 X-ray in, 1158
 Sarsaparilla in lichen, 1055
 in nephrolithiasis, 700
 in onychia, 1104
 Scabies, 1112
 Scarlet fever, 62
 Scarlatina, 62
 Aconite in, 65
 Ammonium carb. in, 67
 Arum triphyllum, 66
 Apis mellifica in, 66
 Ailanthus in, 67
 Arsenicum album in, 66
 arthritis in, 71
 Belladonna in, 64
 Camphor in, 66
 Chloral hydrate, 65
 convalescence from, 74
 Crotalus in, 67
 Cuprum aceticum in, 66
 diet in, 64
 disinfection after, 74
 Gelsemium in, 65
 heart in, 71
 Hydrocyanic acid in, 66
 hydrotherapy in, 68
 Lachesis in, 67
 lymph glands in, 71
 maligna, 66
 nephritis in, 72
 otitis media in, 70
 Potassium iodo-hydrargyrate in, 65
 prophylaxis of, 62
 Quinine in, 66
 rhinitis in, 69
 Rhus tox. in, 65
 Sodium sulpho-carbolate in, 65
 throat in, 70
 Veratrum viride in, 65
- Schleicher's diet in obesity, 210
 Schott exercises in myocarditis, 666
 Schwenger system in obesity, 209
 Sciatica, 890
 Acetanilid in, 893
 Aconite in, 893
 acupuncture in, 896
 air injections in, 892
 Arnica in, 895
 Arsenicum in, 894
 Belladonna in, 895
 Bryonia in, 895
 cold in, 891
 Colocynth in, 895
 counter-irritation in, 892
 electricity in, 891
 Gelsemium in, 893
 Gnaphalium in, 896
 heat in, 890
 hydrotherapy in, 892
 Ignatia in, 896
 Iris in, 896
 Lycopodium in, 895
 massage in, 891
 Nux vomica in, 895
 Pulsatilla in, 894
 rest in, 890
 Rhus tox. in, 893
 Sepia in, 895
 Terebinth in, 895
 Scilla in pleurisy, 598
 Sclerema neonatorum, 1062
 Scleritis, 1137
 Scleroderma, 1062
 Scoparius as a diuretic, 722
 Scrofulodermata, 1073
 Scutellaria in heart diseases, 655
 Scurvy, 241
 diet in, 242
 hemorrhagic, 244
 Muriatic acid in, 244
 Nitric acid in, 244
 remedies in, 244
 Sulphuric acid in, 244
 in infants, 244
 Sea baths, 1173
 Sebaceous cysts, 1086
 Seborrhœa, 1083
 Secale in cholera Asiatica, 53
 in dengue, 43
 in follicular pharyngitis, 308
 in locomotor ataxia, 875
 in pemphigus, 1044
 in ulcerative endocarditis, 624
 Selenium in acne, 1092
 Senegambia fever, 255
 Seminal vesiculitis, 740
 vesicles, tuberculosis of the, 759
 Sumbul in hysteria, 943
 Senile pruritus, 1069
 Sepia in acne, 1092
 in arthritis deformans, 230
 in atrophic rhinitis, 536
 in constipation, 420
 in herpes facialis, 1040
 in insanity, 1001
 in migraine, 981
 in psoriasis, 1048
 in sciatica, 895
 in seborrhœa, 1086

- Septic pharyngitis, 303
 remedies in, 304
 Septicæmia, 145
 Cinchona in, 148
 Collargolum in, 146
 Echinacea in, 148
 Formalin injections in, 146
 Pyrogen in, 148
 Veratrum viride in, 148
 Serum treatment of cerebro-spinal fever, 48
 Senega in chronic bronchitis, 560
 Sexual habits in neurasthenia, 950
 hygiene of epileptics, 915
 Sheet bath, 1168
 Silence treatment of laryngeal tuberculosis, 547
 Silicea in acne, 1092
 in atrophic rhinitis, 536
 in epilepsy, 924
 in insanity, 1003
 in rachitis, 248
 in syphilis, 167
 in tuberculosis, 193
 Sitz bath, 1170
 Skin, diseases of the, 1011
 in measles, 78
 in scarlatina, 72
 in variola, 92
 tags, 468
 Sleeping sickness, 255
 Sleeplessness in chorea, 966
 in fevers, 3
 remedies for, 3
 in neurasthenia, 950
 Sleep treatment of chorea, 966
 Slow eating, 318
 Small-pox, 87
 Snake venoms, 276
 Sodium salicylate in pleurisy, 599
 in rheumatic fever 103
 sulphocarbolate in scarlatina, 65
 Solar heat in hydrocephalus, 853
 Southey's tubes, 719
 Sparteine, 646
 Spasm of the phrenic nerve, 910
 Spastic paraplegia, 876
 Spermatorrhœa, 765
 Sphincter ani, dilatation of, in constipation, 416
 Spigelia in angina pectoris, 672
 in endocarditis, 621
 in facial neuralgia, 906
 in herpes zoster, 1039
 in pericarditis, 612
 in rheumatic fever, 108
 Spinal cord, tumors of the, 881
 hæmorrhage, 881
 Spiritum glandium quercus in splenic diseases, 788
 Spleen, abscess of the, 785
 diseases of the, 784
 infarct of the, 785
 floating, 784
 Sponge bath in typhoid fever, 19
 Spongia in chronic bronchitis, 561
 in diphtheria, 117
 in tuberculosis, 192
 Spotted fever, 43
 Spray, gastric, 336
 Sprinkle bath in typhoid fever, 18
 Sprue, 288
 Sputum, care of tuberculous, 180
 Squill as a diuretic, 722
 Svapnia in typhoid fever, 25
 Stannum iod. in chronic bronchitis, 553
 in influenza, 62
 in insanity, 1002
 in migraine, 981
 in tuberculosis, 192, 193
 Staphisagria in insanity, 1003
 in keratosis pilaris, 1060
 Staphylococcal infections, Opsonic treatment of, 1186
 Status epilepticus, 917
 Steam applications, 1171
 Stegomyia fasciata, 38
 Sterility, 768
 Sterilization of the food, 487
 Stimulants in delirium tremens, 266
 in pneumonic fever, 59
 in subnormal temperature, 279
 in variola, 90
 in yellow fever, 41
 Stimulation in dysentery, 131
 in relapsing fever, 38
 Stock vaccines, 1183
 Stomach, carcinoma of the, 364
 dilatation of the, 376
 direct electrization of the, 337
 diseases of the, 315
 electricity in diseases of the, 337
 goutiness of the, 317
 hydrotherapy in diseases of the, 339
 local treatment of the, 332
 massage in diseases of, 339
 surgery of the, 342
 ulcer of the, 356
 Stomatitis, Argentum nitricum in, 286
 aphthous, 283
 Arsenicum album in, 287
 Arum triphyllum in, 287
 Baptisia in, 286
 Belladonna in, 286
 Borax in, 285
 Bryonia in, 287
 catarrhal, 282
 Hepar in, 286
 Hydrastis in, 287
 gangrenous, 284
 remedies for, 284
 local remedies in, 282
 membranous, 284
 mercurial, 283
 Mercurius in, 286
 Muriatic acid in, 286
 mycotic, 282
 Nitric acid in, 286
 Sulphuric acid in, 286
 ulcerative, 283
 Stools, disinfection of choleraic, 49
 Stramonium in chorea, 968
 in delirium, 29
 in delirium tremens, 266
 in erysipelas, 144
 in fever, 7
 in insanity, 999
 in typhoid fever, 22
 in typhus fever, 35
 Strapping the chest in pleurisy, 595
 Streptococcal infections, 1186

- Stricture of rectum, fibrous, 463
 Strontium lactate in chronic nephritis, 691
 Strophanthus, 643
 Strychnia, 646
 in acute myelitis, 863
 in anorexia, 349
 in asthma, 579
 in delirium tremens, 266
 in enteralgia, 436
 in neurasthenia, 950
 in tic douloureux, 908
 arsenite in diabetes, 223
 phos. in chorea, 969
 Sub-diaphragmatic abscess, 499
 -normal temperature, 279
 remedies for, 279
 stimulants in, 279
 Sudamina, 1095
 Suggestion in neurasthenia, 949
 Suicide, management of tendency to, 993
 Sulphonal, 810
 in night-sweats, 195
 Sulphur in acne, 1092
 in asthma, 579
 in cerebral hyperæmia, 835
 in constipation, 420
 in erysipelas, 145
 in exophthalmic goiter, 794
 in facial neuralgia, 906
 in infantile constipation, 423
 in herpes facialis, 1040
 in hyperidrosis, 1093
 in impetigo, 1036
 in insanity, 1000
 in intra-cranial hæmorrhage, 846
 in keratosis, 1060
 in migraine, 981
 in onychia, 1104
 in perihepatitis, 499
 in pleurisy, 598
 in prurigo, 1020
 in psoriasis, 1048
 in seborrhœa, 1086
 in syphilis, 171
 in tubercular meningitis, 839
 in yellow fever, 41
 Sulphuric acid in dengue, 43
 in hæmoptysis, 568
 in intestinal hæmorrhage, 428
 in purpura, 783
 in scurvy, 244
 in stomatitis, 286
 in splenic diseases, 788
 in yellow fever, 41
 Superfluous hair, 1097
 Superficial anterior urethritis, chronic, 732
 Suprarenal extract in hæmoptysis, 568
 Suppression of urine in yellow fever, 42
 Suppurative otitis media, chronic, 1150
 perihepatitis, acute, 499
 tonsillitis, 296
 Apis in, 296
 Belladonna in, 296
 Guaiacum in, 296
 Hepar in, 296
 remedies for, 296
 surgical treatment, 297
 Surgery of the stomach, 342
 Surgical measures in diseases of the nervous system, 827
 Surgical treatment of aneurysm, 679
 of cerebral abscess, 852
 of epilepsy, 925
 of hydrocephalus, 854
 of meningitis, 841
 of nerve injuries, 887
 of myelitis, 862
 of neuralgia, 889
 of tic douloureux, 909
 of ulcer of the stomach, 360
 Sycosis, 1102
 Sympathetic ophthalmia, 1139
 Symptomatic anemias, 777
 Syncope, hysterical, 944
 Syringing the ear, 1144
 Syringomyelia, 877
 Syphilis, 159
 and dyspepsia, 317
 Asafœtida in, 167
 Aurum mur. in, 167, 170
 Baryta carb. in, 170
 Hepar in, 168, 170
 hygienic management of, 159
 Kali bi. in, 170
 hydriodicum in, 170
 laryngeal, 550
 hypodermatic treatment of, 163
 Mercury in, 161
 Mercurius in, 170
 iod. flav. in, 171
 of the mouth, 284
 nasal, 540
 Nitric acid in, 167, 171
 Pilocarpine in, 168
 Potassium iodide in, 164
 Silicea in, 167
 Sulphur in, 171
 Thuja in, 167, 171
 hereditary, 169
 headaches, 978
 urethritis, 765
 Sweating in acute bronchitis, 562
 Syzygium jambolanum in diabetes, 223
 TABACUM in nephrolithiasis, 700
 Tabes dorsalis, 867
 Tachycardia, 673
 general treatment, 673
 remedies, 674
 Tania solium, 251
 Tœniasis, 251
 Tannic acid in uvulitis, 292
 Tannigen in acute enteritis, 391
 in diarrhœa, 196
 in typhoid fever, 28
 Tape-worm, broad, 251
 dwarf, 251
 pork, 252
 treatment of, 251
 Tapping in anasarca, 719
 Tar in psoriasis, 1046
 Tartar emetic, see Antim. tart.
 Telangiectasis, 1080
 Temperature, measures for the reduction of, 6
 Terebene in chronic bronchitis, 558
 in cough, 194
 Terebinthina in acute nephritis, 685
 in chronic bronchitis, 560
 in hæmaturia, 714
 in herpes facialis, 1040

- Terebinthina in scarlatinal nephritis, 67
 in sciatica, 895
 in typhoid fever, 21
 Terpin hydrate in acute bronchitis, 554
 in chronic bronchitis, 559
 in cough, 194
 Testicle, tuberculosis of the, 759
 Tetanus, 154
 Aconite in, 157
 Bacelli's Carbolic acid treatment of, 156
 Hydrocyanic acid in, 157
 Passiflora in, 157
 Prophylaxis, 155
 surgical treatment of, 155
 Tetany, 955
 Thermic fever, 277
 hydrotherapy in, 278
 Thiosinamine in acute poliomyelitis, 867
 Thirst, 350
 in diabetes, 225
 Thomsen's disease, 982
 Throat compress, 1170
 Thrush, 232
 remedies in, 233
 Throat in scarlatina, 70
 in variola, 91
 Thrombosis, cerebral, 846
 of the cerebral sinuses, 848
 in typhus fever, 34
 Thrombotic hæmorrhoids, 467
 Thuja in impetigo, 1036
 in insanity, 1002
 in pemphigus, 1044
 in psoriasis, 1048
 in syphilis, 167, 171
 in variola, 89
 Thymol in uncinariasis, 259
 Tic douloureux, 906
 Aconitia in, 907
 Alcohol injections in, 909
 Strychnia in, 908
 surgical treatment of, 909
 Tics, 957
 Agaricus in, 959
 Conium in, 959
 Cuprum ars. in, 959
 Hyoscyamus in, 959
 remedies in, 959
 Tinea nodosa, 1096
 Tobacco in asthma, 572
 Tongue, black, 291
 diseases of the, 281
 geographical, 291
 hairy, 291
 ulcerations of the, 290
 Tonsillitis, acute catarrhal, 294
 prophylaxis, 294
 remedies, 295
 treatment, 294
 caseous, 299
 follicular, 295
 suppurative, 296
 Tonsils, diseases of the, 292
 hypertrophy of the, 297
 linguæ, 299
 tumors of the, 298
 Toxæmia in scarlatina, 72
 Toxæmic states a cause of dyspepsia, 316
 vertigo, 972
 Toxic conjunctivitis, 1133
 Toxic gastritis, acute, 354
 Tracheal injections in bronchiectasia, 565
 Tracheotomy, 125
 after treatment, 129
 Trachoma, 1132
 Traumatic pharyngitis, 301
 antiseptic applications in, 301
 remedies in, 302
 urethritis, 765
 Tremor, 963
 Trichiasis, 1121
 Trichiniasis, 254
 Tricophytosis, 1107
 Trichorrhæxis nodosa, 1096
 Trional, 811
 Trypanosomiasis, 255
 Tsetse fly disease, 255
 Tubercular meningitis, 837
 Apis in, 839
 Belladonna in, 839
 Calcarea in, 839
 cold applications in, 838
 Helleborus in, 839
 Iodine in, 839
 Iodoform in, 839
 Sulphur in, 839
 ulceration of rectum, 463
 urethritis, 755
 Tuberculin therapy, 1185
 in tuberculosis, 198
 in tuberculosis of the bladder, 757
 Tuberculosis, Antimonium iod. in, 192
 Aurum arsen. in, 193
 Arsenicum iod. in, 192
 Balsam of Peru in, 193
 Baptisia in, 193
 Calcarea carb. in, 193
 phos. in, 192
 Chininum arsen. in, 194
 Cinchona in, 193
 climato-therapy in, 191
 diet in, 188
 Digitalis in, 194
 exercises in, 177
 Ferrum phos. in, 192
 fever in, 195
 Guaiacum in, 193
 Hepar in, 192
 hydrotherapy in, 179, 190
 indigestion in, 196
 inhalations in, 197
 Iodine in, 192
 laryngeal, 547
 Laurocerasus, 194
 nasal, 541
 Natrûm sulph., 194
 night sweats in, 195
 notification of, 175
 open-air life, 183
 personal prophylaxis, 176
 Petroleum in, 194
 Phosphorus in, 192
 prophylaxis, 174
 public prophylaxis, 174
 rest and exercise, 186
 sanatorium treatment, 182
 Silicea in, 193
 Spongia in, 192
 sputum, care of the, 180
 Stannum in, 193

- Tuberculosis, Stannum iod. in, 192
 tuberculin in, 198
 urogenitalis, 755
 X-ray in, 1155
 Yerba santa in, 193
 and dyspepsia, 317
 of the bladder, 756
 of the kidneys, 758
 of the lungs, 171
 of the mouth, 284
 of the prostate, 759
 of the seminal vesicles, 759
 of the skin, 1071
 of the testicle, X-ray in, 1156
 Tuberculous joints, 1156
 Tuffnell's treatment of aneurysm, 677
 Tumors, intestinal, 437
 laryngeal, 549
 of the kidneys, malignant, 706
 of the lungs, 595
 of the spinal cord, 881
 of the tonsils, 298
 X-ray in, 1157
 Tympanitis, hysterical, 935
 Typhoid fever, 8
 Alcohol in, 15
 Agaricus in, 22
 Arnica in, 23
 Arsenicum in, 23
 Baptisia in, 20
 bath treatment of, 16
 bed-sores in, 29
 Bryonia in, 20
 Carbo veg. in, 23
 cardiac failure in, 27
 cholecystitis in, 28
 Cinchona in, 24
 cleanliness in, 12
 constipation in, 27
 diet in, 12
 epistaxis of, 526
 Gelsemium in, 20
 Hyoscine hydrobromate in, 22
 Hyoscyamus in, 22
 intestinal antiseptics in, 24
 hæmorrhage in, 24
 perforation in, 26
 management of convalescence, 30
 medicinal treatment of, 19
 meteorism in, 28
 Phosphoric acid in, 21
 preliminary purgatives in, 10
 prophylaxis of, 8
 protective inoculations in, 9
 Rhus tox. in, 21
 Stramonium in, 22
 Sweet spirits of nitre in, 22
 spine, 31
 Typhus abdominalis, 8
 fever, 32
 Agaricus in, 35
 Baptisia in, 35
 Belladonna in, 35
 diet in, 33
 headache in, 34
 hydrotherapy in, 34
 medicines in, 35
 Opium in, 35
 Phosphoric acid in, 35
 Phosphorus in, 35
 Typhus fever, stimulation in, 33, 34
 thrombosis in, 34
 toxæmia of, 36
 ULCER of the duodenum, 439
 of the stomach, 356
 Argentum nitricum in, 358
 Arsenicum in, 358
 Atropia in, 359
 Hydrastis in, 358
 Kali bichr. in, 358
 Lenhartz treatment of, 359
 Mercurius corrosivus, 358
 Phosphorus in, 358
 rest in, 356
 surgical treatment, 360
 Uranium nitrate in, 358
 Ulceration of the cornea, 1133
 Ulcerations of the tongue, 290
 remedies for, 290
 of the uvula, 293
 Ulcers, intestinal, 439
 Ulcerative endocarditis, 623
 stomatitis, 283
 local treatment of, 283
 remedies for, 283
 Uncinariasis, 258
 Thymol in, 259
 Unguentum hydrargyri, 162
 Uræmia, 709
 acute, 684
 remedies for, 686
 Uræmic headaches, 978
 Uranium nitrate in diabetes, 222
 in gastric ulcer, 358
 Ureters, tuberculosis of the, 758
 Urethritis, acute posterior, 730
 chronic, 732, 752
 deep anterior, 735
 posterior, 738
 superficial anterior, 732
 posterior, 738
 gonorrhœal, 723
 syphilitic, 765
 traumatic, 765
 tubercular, 755
 Urinary complications in typhoid fever, 29
 fever, 764
 incontinence in locomotor ataxia, 871
 overflow, 762
 retention in locomotor ataxia, 871
 Urine in arthritis deformans, 228
 incontinence of, 763
 retention of, 762
 Urotropin in diabetes, 224
 in pyelitis, 703
 Urticaria, 1017
 Anacardium in, 1019
 Antimonium crudum in, 1019
 Apis in, 1018
 Arsenicum in, 1018
 Astacus flaviatus in, 1018
 Chininum sulph. in, 1019
 Urtica urens in, 1018
 Urtica urens in herpes facialis, 1040
 in urticaria, 1018
 Uterine hæmorrhage in yellow fever, 42
 Utero-ovarian origin of hysteria, 929
 Uvula, diseases of the, 292
 elongated, 293

- Uvula, inflammation of the, 292
 neuroses of the, 294
 ulcerations of the, 293
 Uvulitis, 292
 Apis in, 292
 Arsenicum in, 292
 Capsicum in, 292
 Guaiacum in, 293
 Kali bi. in, 292
 hyd. in, 292
 chronic, 293
 VACCINAL lesion, course of, 85
 Vaccination, 80
 insusceptibility to, 87
 spurious, 85
 technique of, 83
 Vaginitis, acute gonorrhoeal, 752
 Valerian in hysteria, 942
 Vallidol in flatulence, 347
 Valvular lesions of the heart, 625
 clothing, 633
 habits in, 633
 diet in, 632
 marriage and, 634
 occupation for patients with, 631
 rest and exercise in, 631
 Varicella, 94
 Variola, 87
 Antimonium tart. in, 89
 Baptisia in, 89
 Belladonna in, 89
 care of the patient, 89
 convalescence from, 94
 dessication stage of, 93
 diarrhoea in, 94
 diet in, 89
 eyes in, 93
 headache in, 94
 hæmorrhagic, 90
 hydrotherapy in, 90
 prophylaxis of, 87
 skin in, 92
 stimulants in, 90
 Rhus tox. in, 89
 Thuja in, 89
 Varicose veins, 680
 Vascular pressure increased, 674
 Vaso-dilators, 649
 Veratrum album in cholera Asiatica, 53
 in insanity, 999
 in vomiting, 349
 viride in active pulmonary hyperæmia, 583
 in acute bronchitis, 552
 in acute nephritis, 685
 in cerebral hyperæmia, 835
 in cerebro-spinal fever, 47
 in chorea, 968
 in endocarditis, 621
 in erysipelas, 145
 in fever, 8
 in hæmoptysis, 569
 in headaches, 976
 in œsophagitis, 311
 in meningitis, 842
 in pericarditis, 613
 in pneumonic fever, 57
 in scarlatina, 65
 in septicæmia, 148
 Venous infusion, 779
 Ventilation in typhus fever, 33
 of the sick-room in fevers, 4
 Vernal conjunctivitis, 1133
 Veronal, 810
 Verruca, 1058
 Verruga peruviana, 1082
 Vertigo, 970
 Vesiculitis, seminal, 740
 Viola tricolor in impetigo, 1035
 Vipera in active congestion of the liver, 496
 Vitiligo, 1066
 Vocal "pick-me-ups," 543
 Vomiting, 348
 Antimonium crud. in, 340
 Apomorphia in, 349
 Belladonna in, 349
 Bismuth in, 349
 Carbolic acid in, 349
 Creosote in, 349
 Glonoin in, 349
 Ipecac in, 348
 Nux vomica in, 345
 Veratrum album in, 349
 hysterical, 944
 in infants, 402
 in variola, 94
 in whooping-cough, 98
 of alcoholism, remedies for, 262
 Von Noorden's diet in diabetes mellitus, 214
 in obesity, 211
 WARM bathing in cholera Asiatica, 52
 Warts, 1058
 Water infection the cause of cholera, 49
 in cholelithiasis, 515
 drinking in acute nephritis, 683
 necessity for in typhoid fever, 14
 Weaning, 489
 Weir Mitchell treatment of hysteria, 936
 method in obesity, 206
 Wens, 1086
 Wet-pack, 806, 1170
 -nurse, 477
 Whey, 493
 Whooping-cough, 97
 Belladonna in, 100
 Castanea vesca in, 100
 Cina in, 101
 Coccus cacti in, 100
 Corallium rubrum in, 100
 Cuprum metallicum in, 100
 Drosera in, 99
 hygienic management of, 98
 medicines for, 99
 nephritis in, 100
 naphthalin in, 99
 palliative medication in, 101
 prophylaxis of, 97
 vomiting in, 98
 Window tent, Knopf's, 183
 Woman's milk, analysis of, for clinical purposes, 477
 composition of, 474
 Wool-sorter's disease, 153
 Writer's cramp, 960
 Wyethia in acute laryngitis, 545
 in follicular pharyngitis, 308
 XANTHELASMA, 1122

- Xanthoma**, 1070
 diabeticorum, 1071
Xeroderma pigmentosum, 1066
X-ray in arthritis, 1161
 in goiter, 1161
 in Hodgkin's disease, 1154
 in laryngeal tuberculosis, 1155
 in leucæmia, 1153
 in leucocythæmia, 776
 in neuralgia, 1161
 in sarcoma, 1158
 therapy, 1153
 in tuberculosis, 1155
 in tuberculous joints, 1156
 in tumors, 1157
- Yaws**, 1081
Yerba santa in tuberculosis, 193
Yellow fever, 38
 colliquative cases of, 42
 convulsive symptoms of, 42
- Yellow fever**, cystic hæmorrhage in, 42
 diet in, 40
 mosquitoes and, 39
 nervous and typhoid forms of, 42
 prophylaxis in, 38
 stimulants in, 41
 suppression of urine in, 42
 uterine hæmorrhage in, 42
Yersin and Roux's serum, 150
- Zinc chloride** in acute laryngitis, 544
 in uvulitis, 292
 phosphide in locomotor ataxia, 874
 phos. in neurasthenia, 62
Zincum metallicum in chorea, 968
 in locomotor ataxia, 874
 in measles, 78
 in nervous diseases, 826
 in neurasthenia, 951
Zittman's decoction, 166
Zizia in chorea, 968



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